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THE AMERICAN NEPTUNE

A QUARTERLY JOURNAL OF MARITIME HISTORY

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THE AMERICAN NEPTUNE

A QUARTERLY JOURNAL OF MARITIME HISTORY

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THE AMERICAN NEPTUNE

A Quarterly Journal *of Maritime History*

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THE *commercial sailing vessel is now an antique. No longer able to earn its way, it is extinct in our economy and, like all antiques, is of interest only to the historian, the collector, and the romantic. But, paradoxically enough, there are probably more people than ever who enjoy sailing, who like to feel a boat heeling to a smart breeze, to feel the flying spray, and to hear the slat of the sails.*

This is the time of year for yachtsmen. All the little harbours along our section of the coast, which once bustled with coasters and steamboats, come alive again for two or three months. Those people who live for racing, fishing, ocean cruising, or just plain gunk holing are out again. Marblehead Harbor, the focal point, will become more and more crowded until by race week in early August it will seem as if one could walk from Fort Sewall to Marblehead Neck. There are fewer large yachts than there used to be but the number of small boats has vastly increased. And they have taken on a gayer, brighter look, for colours are in style.

Brilliantly coloured hulls are common and pastel sails become more popular each year. It is a curious thing that colour styles in yachts have apparently followed the same path as in men's clothing. Not without reason were hulls either black or white during the Victorian period. Pants came in the same staid varieties. Coloured sails and 'aloha shirts' are equally startling to one whose eyes were conditioned to those quiet contrasts.

But previous to the dull respectability of Victorianism, vessels were gayly painted with yellow, red, green, and buff stripes even as men's garments were gaudier in the early nineteenth century and before. It is very doubtful if any yacht today, however, is as brightly or whimsically painted as was Cleopatra's Barge, *the ocean-going yacht of Captain George Crowninshield. Built in Salem in* 1816, *she was brilliantly striped on her starboard side and painted in a herring-bone pattern on her port. Because of the luxurious taste of her owner and the sumptuous manner in which she was fitted out, she was one of the wonders of her day.*

In mid-September the Peabody Museum of Salem will dedicate a new addition to its building which will contain a reproduction of the elegant cabin saloon of Cleopatra's Barge. *This has been made possible by Mrs. Francis B. Crowninshield in memory of her late husband, himself a notable yachtsman. Many of the furnishings are original pieces that once graced the* Barge's *cabin. In a later number of the* NEPTUNE *we will publish a history of the vessel and an account of the reconstruction. In the meantime, anyone still laying in Marblehead in September may like to see how the first ocean-going yacht in America looked below decks.*

While we are on yachting topics, another item which may interest those who cruise to the eastward is a new book, E ½ S: Some Harbors of Nova Scotia and Thereabouts, *by G. Peabody Gardner, published by the Peabody Museum. If you are heading away down east you will be able to find out from this book what sort of an anchorage you can expect at Ecum Secum, Little Liscomb Harbor, Coddle Harbor, Little Dover Run, Mabou River, Dingwall, Whycocomagh, and other places with equally fascinating names.*

ERNEST S. DODGE

Peabody Museum of Salem

The First Iron Steamer

BY H. PHILIP SPRATT

IRON hull construction was no novelty in 1821, when the flat bottom for the first iron *steamer* came to be laid down. As early as 1777 a small pleasure boat was made of sheet iron[1] on the banks of the river Foss in Yorkshire; she was 12 feet long and 6 feet wide. Ten years later, in 1787, an iron canal boat named *Trial*, of about 40 tons loaded displacement, was built by one John Wilkinson at Willey, in Shropshire; she was 70 feet long and 6.7 feet wide.[2] The hull plates were 0.312 of an inch thick and were secured with rivets; but the stem and stern-posts were made of wood, the gunwales were lined with wood, and the beams were made of elm planks.

The first commercial vessel to be constructed entirely of iron was *Vulcan*, built in 1818 by Thomas Wilson at Faskine, Scotland, to the plans of Sir John Robertson, for canal use. The hull was 63 feet long, 13 feet wide, 5 feet deep, and 4 feet draught laden,[3] built of iron plates on flat bar frames; all the frames and stanchions were forged by hand.[4] About this time the timber suitable for ship construction had become scarce and expensive, and naval architects were forced to consider the use of iron. At first, this innovation met with serious opposition; many experienced shipbuilders declared that to build vessels of a heavy metal was 'contrary to nature.'

However, the first iron steamer, *Aaron Manby*, was laid down in 1821. The pioneers of this enterprise were her namesake, Aaron Manby (master of the Horseley Ironworks, near Tipton, Staffordshire) and his eldest son, Charles Manby, in association with Captain (later Admiral Sir) Charles Napier, who had entered into a speculative attempt to promote

[1] *Gentleman's Magazine* (London), May 1777, p. 244.
[2] John Grantham, *Iron ship-building: with practical illustrations* (London, 1868), p. 6.
[3] *Annual Register of the Year 1820* (London, 1822), Part II, p. 1371.
[4] *The Engineer* (London), 21 January 1898, p. 50.

the use of iron steamers on the river Seine.[5] The hull was constructed of iron plates 0.25 of an inch thick, with a flat bottom[6] and square stern. The fore-and-aft seams were lapped and riveted; the ribs consisted of angle-iron. The keelson was of wood, and wooden bearers were provided under the engines. The one deck, and the beams which supported it, were also of wood. The vessel carried a bowsprit above her raked stem, as shown in the illustration (see Plate 00) reproduced from an old print (dated 1823), which has been presented to the Science Museum in London by Mr. John E. Manby, a descendant of the builder.

The steamer, *Aaron Manby,* was decked in from end to end, so that all cargo was protected from the weather. It was also claimed to be protected from fire, since the vessel was constructed of iron. Two bulkheads were provided between the engine-room and the cargo, one of iron and the other of wood. All the interior of the boat was lined with wood, 'to prevent heat being communicated to the cargo.' The tall funnel, which rose about 47 feet above the deck, was well stayed from the bowsprit, sides, and stern, and appears to have served also as mast, in a similar manner to that of the P.S. *Comet* in 1812.[7]

For her propulsion, however, the vessel depended in the main upon her steam engines of 30 nominal horse-power, constructed in accordance with the patent taken out by Aaron Manby in 1821.[8] These engines comprised two oscillating cylinders, about 27 inches in diameter by 3-foot stroke, which it is probable could have developed about 50 indicated horse-power at full steam. Mr. Manby discovered later that his patent was invalid,[6] since oscillating cylinders had been tried by William Murdock as early as 1785. The idea was also adopted by Joseph Maudslay, whose oscillating marine engine of 1827 is still preserved at the Science Museum in London.[9]

Steam at low pressure (perhaps not more than about 2 pounds per square inch above atmospheric) was supplied from two flat-sided iron boilers, 5 feet wide, 12 feet long and 6 feet high, with rounded tops, placed athwartships. Each boiler contained two furnaces, 4.5 feet long and 18 inches wide, with return flues. The total heating surface amount-

[5] E. H. D. E. Napier, *The life and correspondence of Admiral Sir Charles Napier* (London, 1862), I, 120.

[6] Joshua Field, 'Diary of a tour in the Midlands, 1821.' Manuscript in Science Museum Library, London. Printed, with introduction and notes by John W. Hall, in *Transactions of the Newcomen Society* (London, 1925-1926), VI, 23.

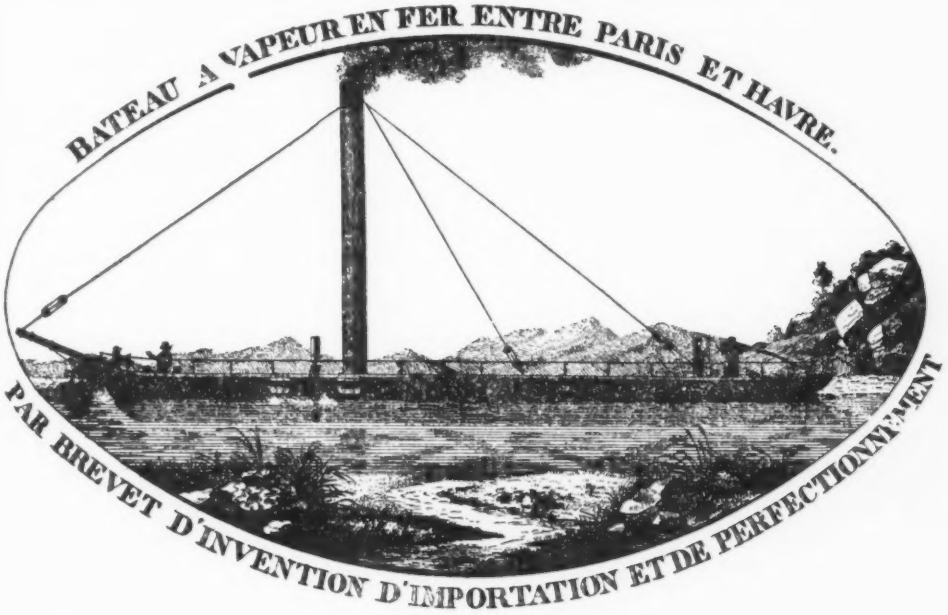
[7] H. P. Spratt, *Merchant steamers and motor-ships* (Science Museum, London, 1949), Part II, p. 92.

[8] Aaron Manby, *Oscillating steam engines.* Specification No. 4558. Great Seal Patent Office, London, 9 July 1821.

[9] H. P. Spratt, *Marine engineering* (Science Museum, London, 1953), Part II, pp. 25-26.

ed to about 470 square feet, and the grate area 27 square feet. The ash-pits were open under the fire-bars; and the flues united into a common uptake to the funnel, which was about 3 feet in diameter.

The intention at first was to use two pairs of paddle-wheels; but the plans were modified later, doubtless from considerations similar to those which affected the P.S. *Comet* of 1812, where the wash from the first pair of paddles had been found to interfere with the efficient action of the



P.S. *Aaron Manby* (1822)
Print in the Science Museum, London

second. Therefore, in the end, *Aaron Manby* was fitted with but one pair of paddle-wheels. These were 12 feet in diameter; and as the over-all width of the vessel, for service on the Seine, could not exceed 23 feet, the width of the paddle floats was restricted to 30 inches. These floats or oars were 'feathered' by the bevel-wheel mechanism of John Oldham, patented[10] in 1820. The paddle-wheels would have made about 25 revolutions per minute for a speed of 7 knots.

The hull was finished at the Horseley Ironworks about the end of 1821, transported in sections to London, and assembled at the Surrey Docks, Rotherhithe, under the supervision of Mr. Charles Manby.[11]

[10] Specification No. 4429. Great Seal Patent Office, London, 9 June 1820.
[11] John E. Manby, 'An early iron ship,' *Country Life* (London, 23 November 1951), p. 1721.

The work was completed on 30 April 1822. Trials were run on the Thames,[12] between Battersea and Blackfriars, on Thursday, 9 May 1822, and it was stated that the vessel 'is the most complete specimen of workmanship in the iron way that has ever been witnessed, and draws one foot less water than any steamboat that has ever been built.'[13]

Under the command of Captain Charles Napier, and with Charles Manby as engineer, *Aaron Manby* left the Thames with a cargo of linseed and iron. She crossed the Channel to Havre, and proceeded up the river Seine to Paris, where she arrived on Monday, 10 June 1822,[14] much to the surprise of the inhabitants. One local newspaper records that 'Le bateau à vapeur en fer *Aaron Manby*, Capitaine Napier, est arrivé avant-hier à huit heures du soir au port Saint-Nicolas.'[15] She is said to have been at first considered as an imposture,[16] because iron could never float. However, she was the first iron-built vessel that ever put to sea,[17] and the first vessel to proceed from London direct to Paris.[18]

Another similar iron steamer, *Commerce de Paris*, of 130 tons burden, was built in 1823 at the Horseley Ironworks, and assembled in the Surrey Docks, London. She could not be admitted into France, however, because of new import restrictions. She had, therefore, to be shipped in sections and reassembled at Charenton, near Paris, where in 1819 Aaron Manby, in partnership with Daniel Wilson, a chemist from Dublin, had founded the important ironworks of Messrs. Manby, Wilson, Henry et Cie. Two further iron steamers were later constructed at Charenton,[19] which realized a mean speed of 7 knots in service on the river Seine;[20] and here in 1824, under the superintendence of Charles Manby, was constructed the machinery for the wooden P.S. *Caroline*, the first steam-auxiliary vessel in the French Navy, and the first French steamer to cross the Atlantic.[21]

Aaron Manby is said to have run aground several times in the Seine,

12 *Morning Chronicle* (London, 14 May 1822).

13 *The Courier* (London, 15 May 1822).

14 *Journal des Débats* (Paris, 11 Juin 1822), p. 3.

15 *Le Constitutionnel* (Paris, 13 Juin 1822), p. 4.

16 E. H. D. E. Napier, op. cit., I, 121.

17 *Journal des Débats* (Paris, 16 Juin 1822), p. 2.

18 Vice-Amiral Edmond Pâris et Pierre M. J. de Bonnefoux, *Dictionnaire de la marine à voile et à vapeur*, Tome II—*Marine à vapeur* (Paris, 1849), p. 503.

19 M. Molard, 'Rapport sur les fonderies et établissements d'industrie de Messrs. Manby et Wilson à Charenton, près Paris,' *Bulletin de la Société d'Encouragement pour l'Industrie Nationale* (Paris, 1825), Tome XXIV, p. 125.

20 M. Tourasse et F. N. Mellet, *Essai sur les bateaux à vapeur* (Paris, 1828-1829), p. 107.

21 H. Philip Spratt, *Transatlantic paddle steamers* (Glasgow, 1951), p. 22. See also: 'Le premier vapeur transatlantique de la France,' *Revue Trimestrielle Canadienne* (Montréal, Hiver 1950-1951), p. 409.

with cargo aboard, but never to have required repairs to her iron hull.[22] In 1830 she was sold; and in 1836 she was at Nantes, in service on the river Loire. The vessel is stated to have been still at work in 1842, still in good condition in 1849,[23] and to have been broken up in France in 1855.[24] Principal dimensions[25] of the P.S. *Aaron Manby* were as follows: Burden, 116 tons; length over all, 120 feet; length between perpendiculars, 106.8 feet; breadth of hull, 17.2 feet; breadth over paddle-wheels, 23 feet; depth in hold, 7.2 feet; draught, 3.5 feet.

[22] John Grantham, *Iron, as a material for ship-building* (London, 1842), p. 7.

[23] *The Artizan* (London, November 1849), p. 259.

[24] Geo. H. Preble, *Chronological history of the origin and development of steam navigation* (Philadelphia, 1883), p. 122.

[25] Information from Mr. C. E. C. Townsend, Port of London Authority.

H. Philip Spratt, a Londoner, studied mathematics and science at Dulwich, later at London University. After some commercial experience, he was appointed at the Science Museum in 1930 *as assistant librarian; his book* Libraries for Scientific Research in Europe and America *was a result. After transference to the British Admiralty for technical calculations in World War II, he returned to the Science Museum, and specialized in steamboat history. He has travelled widely in Europe, Scandinavia, Soviet Russia, the United States and Canada. His latest book,* Transatlantic Paddle Steamers, *was published in* 1951. *He is at present at work on a* Petit Guide du Science Museum de Londres.

Five Dana Letters

EDITED BY JAMES ALLISON

THE five letters here published for the first time throw new light upon Richard Henry Dana and consequently upon his masterpiece, *Two Years Before the Mast*. As a sequel to the brief journal published several months ago in THE AMERICAN NEPTUNE, they are, I think, particularly valuable, because they take us farther behind the scenes of the creative imagination of an important writer. We find out, for example, just what happened on Juan Fernandez; we learn more about the steady improvement of Dana's eyesight; we get a better idea of the meaning and purpose of the voyage—the struggle for and pride in independence of a Brahmin; we detect in Dana a certain morbidity—a constant strain of melancholy. But it is better to let the letters speak for themselves.

Cambridge
Aug. 11th, 1832 [1834]

My Dear Aunt Betsey[1]—

Father[2] has just come out from Boston and informs me that we are to sail on Wednesday the 13th, so I have set down to write you immediately. I must thank you in the first place for your letter. I shall take it with me and there will be times when I shall read it with pleasure and profit.

You mention your not having taken leave of me when you set out for Newport. I observed it, and know the reason. It is not the first time that I have known you to be silent, when others who feel less have said more. I have said but little to you at any time of the great obligations which we are under to you, for they are not of a kind that can be repaid with words. I trust that my conduct is generally a pretty fair representation of what I feel, so that being conscious of what *I feel*, I have a full belief that you *know* my feelings from my conduct.

I know very well that you do not think, as Aunt Martha[3] once did, that I leave from an impression that I am a burden to my friends. I know my friends too well and I am too vain of myself to believe that. No—my reasons are those which I have often stated before. A natural dislike to being dependent upon others when I am

1 Elizabeth Ellery Dana (1789-1874). Having, along with her two sisters, made her home with her brother, she died unmarried.

2 Richard Henry Dana, Sr. (1787-1879). Poet. His best-known long poem is *The Buccaneer*.

3 Martha Remington Dana (1784-1862) had married Washington Allston (1779-1843).

doing nothing for myself; and a belief that it will be the best thing for my health, and constitution.

You must not think too much of the length and dangers of my voyage. There are hundreds who have been such voyages and are making them now. It is perhaps natural that you should, because there are but few of our family who are often far from home; but those who have friends and relatives constantly upon the sea, think but little of it. At any rate—I am travelling upon the beginning of the road of life; and my face is upon the bright side of the picture; I have not yet got far enough to look behind it. You know too, that it is the misfortune of some of the family to think that everything will go wrong and that 'all's for the (worst).'[4] I may perhaps have caught the opposite spirit.

I wish you to give my very best respects to Mr. Ellery[5]—explain to him the reasons of my going to sea—and tell him that I hope he will think me a boy who is 'up to anything.' You may tell him too, that if I make a good sailor, he may say that it is owing to my Newport blood, and to my fortnight's visit there.

I cannot speak of Cousin Edward[6] and Cousin Harriet,[7] without strong feelings of gratitude and affection. I *felt* that the interest which they have always expressed in my prospects, has not been, as in many, the effect of mere politeness. The particular attention which cousin Edward paid to my college exercises, and the interest which he has taken in my literary progress, has given me great confidence in myself and great affection for him. Remember me to them very particularly, and tell them that they do not know what comfort and confidence it gives to a young man beginning the world, to know that there are some, who feel some sympathy with him in success or failure.

Remember me to Mrs. Sedgwick[8] also. I recollect with pleasure the little that I have seen her, and we are grateful to her for what she has done for Charlotte.[9] You may tell her that C. thinks that there is nothing in the world but New York. If we speak of Fresh Pond, she mentions Hoboken; if we speak of Mt. Auburn, she brings up the North River and West Point; and there is nothing equal to what is said and done at Mrs. Sedgwick's.

Give my love to Miss Elizabeth[10] and to Ellery[11] whom I have *seen*, and to the rest
Newport.
whom I *know* very well, though I have not seen them.

I suppose you have seen by the papers that Father has lost his barn. It took fire on Saturday evening about 10 o'clk, and burned until the next morning at daybreak. It was seen upwards of thirty miles back in the country. All the western part

[4] Richard Henry Dana, Sr. was melancholy—often unaccountably, so his son seems to have thought.

[5] Probably Frank (1794-1871); Commodore U.S.N.; Midshipman in 1812; took part in the battle of Lake Champlain; received a sword from Congress.

[6] E. T. Channing (1790-1856). Professor of rhetoric, Harvard.

[7] Henrietta Ellery (born 3 November 1801); married her cousin, E. T. Channing.

[8] The former Elizabeth Dana Ellery (daughter of William Ellery, the signer of the Declaration of Independence). She married Robert Sedgwick (1787-1841).

[9] Ruth Charlotte Dana, sister of Richard Henry, Jr. (1814-1901). She became a Roman Catholic. A friend of Celia Thaxter, she spent her summers at the Isles of Shoals.

[10] Elizabeth F. Ellery (born 13 July 1815); married 4 August 1835; daughter of Edward Martin of

[11] Possibly Frank.

of Boston was splendidly illuminated, and it is said to have been the most brilliant fire we have had for a long time. There were between twenty and thirty engines present, but it was too far gone to do anything.

I have just returned from another fire: the convent at Charlestown was set on fire last night between eleven and twelve and burned to the ground—the convent itself, barns, chapel, and everything. There has been a story about for a few days of a girl's having escaped and then [been] retaken and closely confined and being in danger of her life. We do not believe it; and from what I could learn from a Protestant family in the immediate neighborhood, the girl was probably insane. However, there was a great excitement: an immense mob collected and set it on fire. The inmates escaped with their lives, but lost everything else.

Father wishes me to tell you that Mrs. Fleming is positively engaged to Geo. B. Emerson.[12]

I am to have a jar of pickles from Mrs. Cook, Aunt Martha is making me some ginger cakes, and Charlotte, some hard gingerbread; so that I shall be well provided.

The vessel that I am going in is small, but strong, and a remarkably fast sailer; having been built for the smuggling trade. Tell Cousin E.[13] to look out under the shipping list, for the Brig *Pilgrim*,[14] Capt. Thompson,[15] for California. And now, Aunt Betsy, I must bid you good-bye. I have no doubt that I myself shall be able to come back, if I am spared, stronger and more vigorous. As for those whom I leave behind—I can only hope that there will be no change.

Do not let anyone forget your dutiful and affectionate nephew.

Richard

Letter addressed to:
William Ellery, Esquire
Newport, Rhode Island

Santa Barbara, March 1st, 1835

My Dear Charlotte—

Having written a letter to Father, I take this opportunity (short & uncertain it is) of saying a few words to you. We have, now that we are in harbour, and discharging our cargo, but very little time to ourselves; so that we have to write and read by *snatches*. My plan is to write to Ned,[16] Aunts three,[17] Cousin Mary,[18] and as many others as I can: but how far I shall be able to carry it, and even whether I shall be able to give you more than a line, is uncertain.

12 George Barrell Emerson, second cousin of Ralph Waldo Emerson, author of *Reminiscences of an Old Teacher*, Boston, 1878.

13 Cousin Edward Channing.

14 Built in Medford, Mass., in 1825. Length, 86 feet 6 inches, breadth 21 feet 7½ inches, depth 10 feet 9¾ inches, 180 tons.

15 Born in Maine. Unpopular with his crew, he was about thirty years old at this time.

16 Edmund Trowbridge Dana, Jr. (1818-1869). A.B. Vermont, 1839; first scholar in his class; LL.B. Harvard, 1841; 1849-1854 student at Heidelberg; 1854 *summa cum laude;* returned to America 1856; made his home with R. H. Dana, Sr.; assisted Richard Henry Dana, Jr. with his treatise on international law.

17 Martha Remington Dana (1784-1862) had married Washington Allston (1779-1843); Elizabeth Ellery Dana ('Aunt Betsy'); Sarah Ann Dana (1791-1866). Like Elizabeth, Sarah never married; she made her home with her brother.

18 Mary Smith of Providence.

First, my dear Charlotte, I will speak of your music; you cannot tell what sensations I have, when in my night watch, I bring to mind and give my imperfect utterance to, some of your beautiful airs. A few peculiar notes will bring before me the whole scene of some evening passed at home; and frequently have I passed many a lonely hour of a night watch, in trying to recollect *every* one of your favourite tunes; and the words are as familiar to me as though I had heard them but yesterday.

St. Diego March 20th, 1835

You see, Dear C. that my letter was interrupted, as I feared. Our Captain told us that the *California* would sail in a few days, and that he would give us notice, so that we might send; but she sailed without our being informed of it. The Ship *Lagoda*[19] is to sail from the Port, which we shall leave tomorrow, so that I have a little time to give to you. We have had a very pleasant voyage, the principal events of which are, that we have crossed the Equator twice; doubled Cape Horn; been chased one day and a part of a night by a pirate, who could not catch us; and been to Robinson Crusoe's Island. I would send you a few shells and a pressed flower, which I picked up on that romantic, and beautiful island; but there is no opportunity.—

When I shall return to our dear home, is entirely uncertain; but I hope that two years will not roll over my head, without my seeing you all. This is a beautiful country, a perfect climate, and every *natural* advantage; but the people are lazy, ignorant, irreligious, priest ridden, lawless, vicious, and not much more than half civilized. I prefer being at sea, though we have some pleasant times on shore on 'liberty days,' which come about once in four weeks to each one. At sea we have the forenoon of every other day—to ourselves, and all day Sunday. There is probably no place on earth where the Sabbath is as peculiar a day as at sea. The decks are cleared up, everything put in its place, and no work done, except to trim the sails to the wind, etc. (which in the trade winds is seldom necessary). The sailors all dress in their best, and the forecastle and chests put in order and every one has a book or paper to read, or some other quiet employment. On this day too, we have an extra dinner, i.e., a boiled flour pudding, which is thought a great deal of. There is no disturbance from coaches and chaises, and noisy people, as at home: there is no sound but the noise of great deep. There is an inclination, even among the worst sailors, to respect the Sabbath and to read religious books on that day at sea; and in our watch, we went so far as to agree to mend no clothes, or do other work for ourselves, after eight o'clk on a Sunday morning.—

I forgot to mention, in my letter to Father, that there are a great many Sandwich Islanders on this coast, and that I have found several who know Robert Davis's mother, one very smart little fellow sailed from here yesterday in an English Brig bound to Oahu; I told him all that I could about Robert, whom he had heard was in Boston. Mr. Jones, the American consul, is expected here in a few months from Oahu.—

[19] The most famous exhibit in the Bourne Whaling Museum, New Bedford, Mass., is the whaling bark *Lagoda*. Visitors to the Museum can go aboard this model; length, from figurehead to stern, 59 feet; from flying jib-boom to the end of the spanker-boom, 89 feet. Her mainmast is 50 feet high. Mr. William H. Tripp, Curator of the Museum, has assured me that this is the *Lagoda* mentioned here and in *Two Years Before the Mast*.

I have picked up a few Spanish words, and have also learned a little of the Sandwich island tongue which is singular enough.—

The mate of our brig has just told me that we are to sail for Santa Barbara and Monterey tomorrow; we must take in ballast this afternoon, so that I must close, and give a few lines to Ned. When you give my love immeasurable to Aunts three, tell Aunt Elizabeth that I took her letter to me from Newport, with me, as she requested and have read it frequently; I am not inclined to a foolish vanity; but I can say that 'woman's weapons—water drops'—have not filled my eyes, even at the most tender moments of separation, since I left home; except in reading that, and in looking at that small remembrance of one lost to us which you gave me at parting. You cannot say too much from me to Cousins Mary and Sophia,[20] Cousin Frank[21] and wife and Prof. and Lady Channing. My only wish is, that *all* may be spared, and that we may meet again and once more, even for an hour, form a family circle. I can hardly hope for this, unless it shall have pleased God to give strength to the feeble, and healing to the sick.

I have kept your note and also the one from Cousin Mary, which Father brought me when we were lying in the stream. You say that you will remember me in your prayers; no doubt you all will. It is a great satisfaction to me to think, at different times, that there are many whose thoughts are on me—that I am not away, and forgotten. How many beautiful Italian airs have you learned? Any equal to 'O Dolce concento' or 'Cielo a miei lunghi Spasimi'? I believe it would melt my heart to hear them.

Good-bye my dear Charlotte—

Your affectionate brother Richard Henry—

My dear Ned—

Inter erroris salebrura longi
Inter ignotae strepitus loquelae,
Quot modis mecum, quid agat, requiro
(Carissimus Fratris!)[22]

You must not be critical. You cannot expect good grammar or metre from a sailor. If your vocabulary will supply you with a dactyl, I hope you will make the substitution. Whether it has pleased God to cut me off from all hopes of a literary or a professional life, I know not. At all events I feel that I have done my duty in coming to sea; and I can truly say that I am, at heart, lighter and happier, than I was during the last year of idleness which I spent at home. I am now independent, a burthen upon no one, and capable of taking care of myself, if necessary. Then I was dependent and useless—an object of pity, a dead weight upon the hands of them to whom I should have been a support, when I should have been one of hope and pride.—My constant hope now is, that the voyage may be short, so that I can return, and God willing, commence a professional life before it shall be too late. At all

[20] Sophia Willard Dana married George Ripley (1802-1880)—editor, reformer, literary critic; founder of Brook Farm in August 1827. She was the daughter of Francis Dana, a niece of R. H. Dana, Sr.

[21] Francis Dana (1806-1872). Son of 'Uncle and Aunt Dana' mentioned below. In 1832 he married Isabella Hazen White of Greenfield (1809-1886).

[22] Surrounded by the unpleasantness of long wandering, surrounded by the noise of unknown language, how many ways do I ask myself, dearest brother, what you are doing.

events, as I said before, I am not like the Huntsman with but one string to his bow, and that broken. I have a means of support and of independence.

Many a time, my Dear Ned, have I called to mind the imaginary, or rather, the distortedly real characters with which we peopled our native town. The Hero of the 'little war and of the . . .[23] The 'Bigelow estate'—'The Beck lot'—'I don't know' etc., etc. We had fine sport, to be sure, at the expense of our fellow creatures. I hope your characters not like the shuttlecock which needs two . . .[24] to kick it again.

I expect to find many changes when I return; I dread to find them at home—but I will not speak of that—I mean abroad. How stands the Political world? I suppose old animosities will have been healed, for new to spring up—and old party lines, traced in the shifting sands of life, lost; and new ones drawn; again for a time to divide, excite, and occupy the mind of 'Godlike man.'

Notwithstanding my moralizing, I believe there were few more zealous politicians than I was; and much would I give for the 'Daily Advertiser' sent to me every morning. Apropos, How is Uncle Frank,[25] and also Mr. Allston?[26] Give my love, respects and duty to them. I can almost see them reading 'today's,' laying aside 'yesterday's,' and looking forward to 'tomorrow's.' Remember me too, to Uncle Ned.[27] Would that he might be spared, mind and body; and that we may not, at my return, have to think of him as of one, whose great intellect is to be known and felt no more!

I have many things to ask, about yourself; but it will be too much like carrying on a conversation with Echo. I must make my own answers. How are your eyes? what are you doing? and where are you? I hope that you are well, studying and at home. But may God bless you, wherever you are.

I have not told you much about the voyage, for I have said everything about it in my letter to Father and Charlotte. Our Captain, we all dislike very much. He is selfish, vain, proud, ridiculous, and bad tempered. He has flogged two of the men very badly, and for nothing. They will try to make him suffer for it when they return; and I have no doubt they will succeed, for both the Mates will testify for them. Our chief Mate—Mr. Amezene[28]—is an excellent man: calm, quiet, reasonable, good humoured. He never would hurt the hair of any man's head. He can not get along with the Captain. The man who came out as 2nd Mate, Foster,[29] has been broken, turned forward. He is rather idle and an indifferent seaman; and I do not know what his character is on shore; but he has had a pretty good education,

[23] MS. torn.

[24] MS. torn.

[25] Francis Dana (1777-1853)—brother of R. H. Dana, Jr.'s father. Married to Sophia Willard (1775-1840). The father and mother of Sophia Ripley. Referred to later as 'Aunt and Uncle Dana.'

[26] Washington Allston (1779-1834). Brother-in-law of R. H. Dana, Sr. and 'Uncle Ned,' friend of Coleridge. Painter. His second wife was Martha R. Dana, cousin, on the maternal side, of his first wife, and sister of R. H. Dana. Author of *Monaldi*.

[27] Edmund Trowbridge Dana (1779-1859), had himself gone to sea as a Midshipman in the Navy, but he had given it up on account of seasickness. He gave to the city of Cambridge land for a 'Cambridge Athenæum' to be used for lectures and for a library which for twenty-three years was called the 'Dana Library.'

[28] Born in Epsom; resident of Portsmouth; age 28; height 5 feet 8½ inches; complexion, light; hair, brown. Correct spelling of full name: Andrew B. Amazeen.

[29] George Foster; born in Scituate; resident of Scituate; age 23; height 5 feet 6½ inches; complexion, light; hair, brown.

and is a thoroughly good natured fellow. He thinks of returning on the *Lagoda*. I have told him to go and see you all at Cambridge. Our new 2nd Mate[30] is a fine fellow. Our Captain has always treated *me* well enough, and will leave the brig in a few months; so that we are well enough for our officers. Henry Mellus[31] has been unwell and made but an indifferent sailor, so the Capt. has taken him aft to be Supercargo's clerk. Little Sam. Hooper[32] is a real old tar, and is well and hearty. My other Mess-mate Ben Stimpson[33] (son of Dr. Stimpson of Dedham) is a clever fellow and will make a good sailor. You recollect that we were in the Steerage when we left Boston; immediately after we left the Cape, the forecastle was enlarged, and we all went forward. You are more independent, more 'Ship shape' and have more privileges; than you do aft. When you have a good crew there is no comparison. I advise every 'green hand' to go right into the forecastle.

If you see Jim Hodge[34]—remember me to him, and tell him to extend it to his whole family, and my friends in Plymouth. Good-bye, Dear Ned, I hope you miss me as much as I do you. I am very sorry that I cannot write to Aunts.

Richard Henry

I hope you are not critical; you must excuse my hand-writing. If you knew where, with what, and on what, I am writing—you would find some excuse.

Letter addressed to:	Readdressed to:
Miss Charlotte Dana and	Edmund T. Dana
Edmund T. Dana, Jr.	Care Pres. Wheeler
Care of Richard H. Dana, Esq.	Burlington
Cambridge, Mass.—U. S. America	Vermont
Ship *Lagoda*	

Post-marked Northampton, Mass. 9 Oct.

Brig *Pilgrim*
off St. Pedro, California
March 13th, 1835

Dear Father—

We arrived at the Port of Santa Barbara on the 14th day of January last, after a passage of four months and twenty eight days. This is called remarkably short. We had about a week of very bad weather off Cape Horn, but all the rest of the voyage has been very pleasant. When off the Cape, we had rain, hail, snow, head winds, and close reefed topsails every night; but it generally moderated after sunrise, which was about half past three A.M. By virtue of plenty of warm clothing, and the necessity of continual motion, I kept myself from freezing; and I found that I—home-bred, gentleman-bred, college-bred—could stand it as well as the roughest of them. (Don't forget to remember me to Miss Sawyer, and to tell her that I believe that the

[30] James Hall; born in Pittston; resident of Boston; age 21; height 5 feet 10 inches; complexion, light; hair, brown.

[31] Born in Dorchester; resident of Dorchester; age 18; height 5 feet 7¾ inches; complexion, dark; hair, dark.

[32] Born in Marblehead; resident of Marblehead; age 12; height 4 feet 2½ inches; complexion, light; hair, light.

[33] Age 18; height 5 feet 10 inches; complexion, light; hair, light.

[34] James Thatcher Hodge (Harvard 1836). He died in 1871.

tippets or whatever they are called, which she made for me, saved my ears from freezing.) Immediately after doubling the Cape we came into fine weather again, and made a very short run of eleven days to Juan Fernandes. We spent two days at this romantic and beautiful island. The officers and some of the crew sent letters by a Chilian Brig of War, to the U. S. Consul at Valparaiso, to be forwarded to Boston. As I was one of the watering party, I could not get an opportunity to write even a word, until it was too late: so that I got a good view of the island, its wild goats, wild mountains, and scarce less wild inhabitants; and lost my chance of writing home.

For six weeks after we left the Island we had 'Skysails' set all the time; and made no change of sail except once or twice shifting 'Studding-sails,' as the wind varied a few points from being directly astern. Any sailor will tell you that these are proofs of fine weather; indeed I cannot conceive of anything finer than that climate of the Pacific. There was not a day when it was too warm, or too cold; but all the time, a beautiful and healthful evenness of temperature.

Strange as it may seem, I have not been disappointed in a sailor's life. Indeed I did not go with the wild, foolish notions which carry many, and which cannot but meet with disappointment. There is no mistake about a sailor's life being a hard life—and sometimes with wet-cold-watching-risk and hardship—and cut off from every comfort of 'Society, Friendship, and love, divinely intended for man'; it seems hard enough; but there is fine weather again, and then there is time for reading, writing, and other occupations during your watch below, and for thoughts of home and other reflections during the long, starlit, night watch. And then the continual motion of the vessel; the change of climate, zone, and even hemisphere; the great deep and all its wonders—everything is on a great scale—there is a 'something' which there is not on land.

In addition to this our Brig is a fine little vessel, and we have an intelligent and respectable crew, and better men than the mates (with whom we are principally concerned) I should never wish to sail with. I have increased in strength and bodily vigour, and have not had a sick day, or even a head-ache, since I left you. Putting all these things together, I can say that my voyage has been a pleasant one, and my time has passed swiftly and happily away.

Since the first two or three weeks I have had no trouble with my eyes, and have great hope of their complete restoration. To be sure I have not many opportunities of using them, and none at all by candle light, and much may be owing to exercise, fresh air, and plain diet; yet I have great hopes that they will be equal to anything that I may be called to put them to.

Soon after we left Boston I began at the very beginning of Bowditch's Navigator, and when we arrived on the coast had nearly finished it. I have worked one or two lunars, can take an observation of the sun, keep a dead reckoning, and work the different kinds of sailing—Plane[35]—Mercator's[36]—Middle Latitude,[37] etc. I can say

[35] In plane sailing the earth's curvature is neglected, and the distance, departure, etc., are equivalent or correspond to the sides of a plane right triangle formed by the meridian of the initial point, the parallel of the final point, and the rhumb line joining these points.

[36] Sailing in which the differences in latitude, departure, etc., are considered in their relations as plotted upon a Mercator's chart, and are found from a table of meridional parts.

[37] Sailing in which the course cuts parallels and meridians obliquely, and departure is measured along the parallel of latitude midway between the latitude ends of the course.

without vanity that when we return, I expect to be a better Navigator than anyone on board, for my Mathematical Education enables me to *understand* that which the officers can only work by rule and by the tables.

My Literary Education too I have not entirely neglected. We have a plenty of books and I read them whenever I can get an opportunity. I read the books of Joshua, Samuel, and Kings in the Old Testament, Cowper's Correspondence (a present from Dr. Channing),[38] also the principal part of his poems, Thompson's Seasons,[39] Cobbett's 'letters to young men,'[40] and also several tales, old and new, and tracts given to some of the crew by Father Taylor.[41] This gentleman is very much liked and respected by the Seamen, and they are all in the habit of going to his church when in Boston. Indeed Father Taylor, Dr. Bowditch, and Gen. Jackson are the stars of the age in their estimation.

One of our crew is a German,[42] and has lent me an Almanac, Lutheral Prayer-Book, and a few popular songs which may serve in some measure to keep alive my knowledge of German.

There was one dark day in our voyage which I have not yet spoken of. A few days after we had doubled the Cape, we were aroused one morning by the cry of 'all hands on deck! A man overboard.' The vessel was hove aback, the boat lowered, and we all sprang into it; and it was not until we were out in the midst of the wide ocean in our little boat, that I had time or thought to ask whom we had lost. It was a fine young English sailor, named Geo. Bellamer, who had gone aloft, and fallen from the main rigging, one of the ratlins having parted—as we suppose. There was a high sea running, and he was heavily dressed and did not know how to swim, so that there was no hope of saving him. We pulled about for some time, but were obliged to return with heavy hearts to the vessel. No one can have any conception of the feelings of a Ship's company when one of their member, with whom they have been so constantly associated, and separated from the rest of the world, is taken suddenly from them.—His watch-mates said that on the night before, during his watch on deck, he talked constantly about his parents and home, and of returning to them after this voyage; a subject which he had never before spoken upon.

I have now told you everything that I think can interest you about myself and my voyage; I will now say something about yourself and everyone at home.

To say that I have thought of home and you all, will be saying nothing at all. I think of you always, and with feelings sometimes that I never have had before. The length of our voyage is entirely uncertain, as well as the lives of us all; so that sometimes I feel a terrible misgiving about what may happen before I return. And even now while I am writing, I do not know who may be alive to read. But I can only hope that all is yet well with you all; and I shall speak of all as if it were so.

[38] William Ellery Channing (1770-1842). Clergyman. William Cowper (1731-1800). English poet. An unpublished letter to R. H. Dana written by C. B. Morison, 8 November 1926, shows that the copy of *William Cowper's Correspondence* which Dana mentions here was the Boston edition, 1824.

[39] James Thomson (1700-1748). English poet. *Winter*, 1726; *Summer*, 1727; *Spring*, 1728; *Autumn* and the complete collected *Seasons*, 1730.

[40] William Cobbett (1762-1835). English essayist, politician, agriculturist. The full title of the work mentioned here is: *Advice to Young Men, and, incidentally, to Young Women*, 1830.

[41] Father Edward Taylor (1793-1871), ex-seaman and Methodist preacher. Admired by Emerson. A likely stimulus for Melville's Father Mapple in *Moby Dick*.

[42] John Holtz, carpenter; German citizen; age 37; height 5 feet 11 inches; complexion, light; hair, dark.

I shall not send love to any of the family, for if I cannot write to each one separately, and tell what I feel; the common expressions of love and remembrance will be worse than nothing. But there are many not in our household to whom I wish to send love and remembrance. I shall write to Cousin Mary if I have time. Cousin Sophia and Mr. Ripley, Cousin Frank and his wife, Aunt and Uncle Dana and Uncle Ned are often in my mind; and many a time have I wished for the 'Daily Advertiser,' and a pleasant half hour with Prof. Channing and Lady. Often too, of a Sunday evening, have I thought of [Mr.] Allston walking up for Aunt Martha, and asking Charlotte for 'one more song.'

There is hardly one whom I have known, or who has shown an interest in me, whom I do not at some time call to mind. If you should write to Uncle William at Providence,[43] or to Mr. Ellery, please to send my respects to them. Dr. Channing also, and family, Dr. Shattuck[44] and family, and Mr. Woods[45] must not be forgotten. My respects to the Rev. Mr. Adams[46] and Lady and to 'Miss Nancy.'—You may think me long in my catalogue; but those who have never been 'far away at sea,' cannot know the strong desire we have of being *sometimes* brought to the remembrance of *all* our friends and even acquaintances.

I commenced a letter to Charlotte and also one to you, from Santa Barbara, in hopes of sending it by the Ship *California* belonging to Mr. Sturgis; but she sailed without our Captain's giving us any notice; so that we lost the opportunity. The Letter to you, I lost; but Charlotte's I shall continue in hopes of sending by the *Lagoda*.

I said something about the uncertainty of the length of our voyage. It is indeed uncertain whether the Brig will ever return to the States; and there is some talk of our being on the coast nearly two years. This is not what Mr. Sturgis assured me, so that I do not believe it. At any rate, we shall return after we have been here long enough to collect the next Ship's cargo; for no one will remain on the coast longer than he is obliged to. I prefer being at sea a great deal to being at anchor on some accounts. We have not so many opportunities for reading, studying and writing at sea, and are constantly boating and in the water; but hard work and exposure do me no harm, on the contrary I grow strong, and feel remarkably well; and I feel that after this, I shall be 'up to anything.'

I shall attempt to write to Aunts and Ned before the *Lagoda* sails.

There are many things which I could say if I had time, and many more which I shall wish I had said after I have sent this letter; but which I have not now in mind. If I shall ever return to Cambridge and find you all as I left you, in any measure; it will be the happiest day of my life. You cannot give too much love to *all*.

Your affectionate son
Richard Henry Dana

R. H. Dana Esq.
Cambridge.

[43] William Smith, brother of R. H. Dana's mother.

[44] George Cheyne Shattuck (1783-1854). Physician and philanthropist.

[45] Alva Woods (1794-1887). D.S.T. Brown, 1821. Later a professor at Brown. President of the University of Alabama (1831-1837).

[46] The Reverend Nehemiah Adams, Jr.—a colleague of Rev. Abiel Holmes (after his dismissal due to the 'Cambridge Controversy'). They were pastors of the 'Shepherd Congregational Society.' In 1834 Adams left to become pastor of the Essex Street Church in Boston.

Ship *Alert*[47]
Monterey, Coast of California
Dec. 31, [1835]

Dear Father—

It is now nine o'clock of [the] last day in the year, when I set myself down to write you a few lines. Henry Mellus has just come in and informed me that a Russian Barque which is lying in this port is to sail tomorrow morning for Magellan and the leeward coast of Mexico; and that there is some chance of getting a letter forwarded thence, to the United States. Even on this bare chance, I should have sent a complete budget, had I known of the opportunity before: as it is I must do as much as I can; and as for the rest, I shall leave it to you to assure all at home that if they are disappointed at not receiving letters—I am still more so at not being able to write.

The Ship *Alert* arrived on this coast during the month of May last, and by her I received the packet from home; containing letters from you, Ned, Charlotte, Aunts E. and M., Cousin Mary, Prof. Channing and Lady, Dr. Channing and Mr. Adams, and James Hodge. Those who are at home, or are only absent for a short time, can have no conception of my feelings. I read them all after candle light, and did not perceive any weakness of my eyes. I was at home, in spirit, in [an] instant. They were all that I desired, and more than I expected. Of the letters and remembrances from the family at home, I will say nothing. I *knew* that I held some place in their thoughts and affections; and those proofs of them were, and continue to be, my greatest comfort in my long, long separation. But there is a peculiar satisfaction, especially to a *young* man, in feeling that he is remembered by others, on whom he has not the same claim. The letters from Cousin Mary, Cousin Harriette, and Prof. Channing, Dr. C. and Mr. Adams, together with messages of love and remembrance from others; gave me great confidence and delight. They made me feel that I had friends to whom I was an object of some interest—that I might not come and go, and no one care for me, but my own flesh and blood—that a few years would not make me a stranger in my native place—That those who are often in my thoughts are not entirely indifferent to me.

In your letter to me, you say that Mr. Sturgis expects the Ship home in April 1836. This must be a mistake, or else *he* is much mistaken in his calculation; for we do not expect to leave the coast before June next; which will bring us home in the autumn of the year 1836. There is considerable difficulty in procuring hides and tallow; so that we cannot expect to be in Boston before the time that I have mentioned.

As soon as I received my letters I applied to Capt. Thompson, who has taken command of this Ship, to be admitted on board. He said that he had received orders to allow me to return in the Ship, and upon my telling him I should prefer to go on board immediately, he procured one from the ship to exchange with me. My reasons for doing this were that a large and fine ship like the *Alert* is a more comfortable vessel than a small brig; and that her duty on the coast is pleasanter. Also the customs and style of seamanship are different and superior on board a large

[47] *Alert* was built in 1828 at Boston. She had two decks, three masts, and her length was 113 feet 4 inches, her breadth 28 feet, her depth 14 feet; she measured 398 and 18/95 tons. She had a billet head and a square stern, but no galleries. The builder was Noah Brooks of Boston.

vessel; and I wished to become acquainted with the ship's company with whom I was to make the voyage home. I have a good crew and excellent officers; and everything goes on well. We are employed in trading up and down the coast from St. Francisco which lies in 37° 49′ N. to St. Diego in 32° 39′; remaining not longer than three or four weeks at a time in one port. This coast is, for the most part, very safe, with some good harbours; and a most delightful climate during the Months of Dec., Jan., Oct. March and April we are liable to South Easterly gales and wind and rain; but it is not cold enough for snow and ice. During the rest of the year the light trade winds blow from the N. W. and we are sure of fine weather.

From the 10th of May until the middle of October we had not one unpleasant day, nor a drop of rain. Yet we did not suffer from heat or draught. With the help of dews, vegetation flourishes; and I do not recollect one day when we could be said to suffer from heat. At noon, the sun seems to be covered with a thin gauze of ether, which does not intercept the light, but surely lessens the glaring heat of its rays. I do not believe that there is a finer climate in the world; but the inhabitants are for the most part ignorant, superstitious, and lazy—a mixture of the Spaniard and the Indian; and nearly all the trade of the country is in the hands of Americans and English. They are obliged to be baptised into the Catholick Church before they can hold property and marry in the country. This costs them but little; and after they have been baptised, repeated their 'Padre nũestro,' and the priest has called them 'bueños Christianos,' they have nothing more to do on the score of religion. They go on making money by selling diluted rum and brandy to the Spaniards and Indians at a Rial (12½ cents) per glass; cheating the customs—stealing horses and cattle—breaking the Sabbath—marrying and bringing up children to go and do likewise. As is generally the case, the Foreigners excel the natives in following up the vices of the country.

As for myself, I have grown somewhat in stature and I am confident that I have gained a great deal in robustness and strength of constitution. My eyes are certainly much better than they were; and, were it not from fear of giving too much ground for hope, I should say that I had very little doubt of their being entirely restored. At all events, if I should be compelled to follow the sea, I shall have gained some hardihood and experience; and if not—apart from the cure of my eyes—the knowledge that I shall have acquired, of all kinds, is not to be despised, and may be of great use to me and others.

All my spare time is occupied in keeping my wardrobe in order and in readiness. There are a great many books belonging to the officers and crew, and the Capt. is very willing to lend his. The third Mate[48] is a nephew of Mr. Bryant's, and about my age. He is a pleasant and promising young man and is very obliging to me. A work of Mad. De Stael's[49] and Letters of Genius, which I have lately borrowed from him, have given me great pleasure. You can have no idea of the avidity with which one at sea devours books of all sorts, and when we fall in with some standard work, it is a treat indeed. I have continued to read the Old Testament, and have just finished the glorious and poetical history of Elijah. Hardly a Sunday passes over my head, without my thoughts turning homeward. I picture to myself the House of

[48] James B. Hatch; born in Springfield; resident of Springfield; age 19; height 5 feet 7 inches; complexion, dark; hair, dark.

[49] Anne Louise Germaine Necker (1766-1817). Author of *Delphine* and *Corinne on l'Italie*.

worship, and the sound of any, even the most indifferent, music would be beyond price to me.

Speaking of music, I must speak of Charlotte, and I cannot do that in the third person. No! My dear Sister! wherever you may be if God has kept you in the land of the living—you do not know what a tie between me and home, those sounds have been, which He has given you the power to utter. Often when alone have I by their aid, 'summoned up remembrance of past time.' And often shall I do so again, until, if it be God's will, we shall all meet again round the family circle. I can hardly hope to find that circle unbroken: but I live in that hope.

I cannot thank Ned too much for his letter—such a fund of news and entertainment—I have read it over and over again. Ned and I know one another too well to have many words pass between us upon paper—that is—words of ceremony. Had I time I would write something to him, with the endeavour to amuse or inform; but I must merely express my hope that he is now able to do something.

Of Aunts I need say nothing. The love which I bear them I cannot express; and the debt which I owe them, I never can repay. If I have ever in the inconsiderateness of childhood, or the vaunts of youth, said or done anything to give them sorrow; now is the time that I remember it. But I know that they have long ago forgiven them. From Aunt S. I could not expect *written* love and remembrance, but I received them, and felt them as much through another. Aunt Martha and Aunt Elizabeth's letters I have now by me. If on my return, I shall find them yet among the living, the consciousness of being an object to them of affection and interest will not be the least of my motives of action.

You speak, in your letter, of your having more of success in the worldly way, and of health's being improved. My heart misgives me, that you might have said much in order to give me comfort. I never had any doubt of your final success in literary popularity, but if your health . . . until I return I have nothing more to ask. I must now draw to a close. I desire my love and remembrance to be scattered with no frugal hand. Prof. Channing and Lady, Mr. Allston, Dr. Channing and family, Uncle and Aunt Dana, Uncle Ned, Cousin Frank and Wife, Mr. Adams and Family, Dr. Shattuck and family and Mr. Woods, are names which I have set down in my memory. To Cousin Mary, for her beautiful letter, I have nothing to give but thanks; and Messages to Cousin Sophia and Mr. Ripley. I must charge Ned with my remembrance to James Hodge, and through him, to my friends in Plymouth. There is no one who can inquire after me whom I have not, at some time or other, had in my thoughts.

I had almost forgot to mention the Duck, shoes, etc. which I received in very good season. I hope that you have received the letters which I sent home by the Ship *Lagoda*. I entreat you, My dear Father, not to give yourself one moment's anxiety about me. I am in fine health, and am as happy as one can be, in my situation. The Capt. treats me very well indeed. We have a noble Ship, excellent officers, and a steady and intelligent crew. I have begun to count the months to the time of my return.

May God hasten that time—

Your affectionate son—
Richard Henry Dana

R. H. Dana, Esq.
Cambridge, Mass.

Newport
Sept. 23rd, 1836

Dear Ned—

You will no doubt know my hand, and perhaps be astonished to find that I am in Newport. The *Alert* arrived at Boston on Tuesday last (20th) after a passage of four months and 12 days from California; and finding that Father and Charlotte were at N., I set off immediately, via Rail Road and Steam Boat, and reached here in 5 hours. I should have written you from Boston if I had had time; but the few hours that I was there, I was on the drive continually, and this is the first moment that I have had.

So you have got to be a Sophomore, have mounted a beaver hat, and have actually grown taller. I am afraid that I shall find you as much altered as you will find me—whenever we meet. When that will be, I cannot tell. You have no vacation, I learn, until January; so that you cannot come to me. I should like very much to go up to Burlington, and take a look at you and it is not unlikely that I may—but you must not expect me.

They tell me that you are doing very well in your studies. Perge! macte virtutem! I suppose you have not got into Metaphysicks yet. When you do, Father will expect wonders, since you are with 'Marsh and Wheeler,' and in the midst of the 'Coleridge atmosphere'—the empyrean of Philosophy. 'After all'—are they so wonderful? is there anything so elevating in their conversation and conduct, as Father imagines? I suspect that the little College troubles, grievances, rumours, misunderstandings, tend to lessen one's reverence for the exalted characters of one's officers.—It may not be so with you. But it was so with us, at Harvard.

Father looks better than I expected, and Charlotte looks remarkably well. Her hair is long and that improves her appearance very much. She never looked well in a cap. Aunt E. is here too. Mrs. Sedgwick and three children. I suppose that we shall soon return to Boston.—I have no time to learn the news yet. I hear that the Colonel is dead. 'Rest! Warrior, Rest!' He *rose* to a *seat* in the Legislature (if one may so speak), before his exit; so that he did not experience long that 'hope deferred which maketh the heart sick.' Everyone else is, I believe, living, and nearly the same as when I left. Leonard Lyon Esquire, Mr. Galson, Mr. Gorden, and 'a few other gentlemen' have paid the debt to nature—the only debt, by the way, that they have been in condition to pay for some time past.

Ripley Bigelow, I hear, is dead. He had the Consumption as the Ladies call it. I did not know that he was so dissipated. So much for having more money than he knew what to do with. This is something that you and I are not in danger of.

I received one long letter from you when I was in California. You gave all the Political news for which 'muchos gratias.' When I arrived I knew nothing about the country. Who was to be President, or anything else. Uncle Frank offered to make me acquainted with the state of the country, and accordingly went on to give a most favourable account of the Whig party and the *rascally* conduct of the administration. No doubt a little highly coloured, and a little too sanguine. He says that the Dutchman[50] will not be elected; and Uncle Ned makes an indefineable sound which may be construed into assent. Were Mr. Ellery living, I should no doubt have enough of Politicks, but I shall soon get the run of things again.

[50] Martin Van Buren (1782-1862)—eighth President of the United States.

I am going from this place to Providence to spend a few days, and we are all to return to Boston. After that I shall probably make a trip up to the mountain State to Burlington. When a sailor once gets his 'land tacks a'board,' there is no knowing where he will 'bring up.' Father says that I might as well 'upon the whole,' tell you that I shall come 'if nothing happens.' He is waiting for me now. All send love.

Yours abruptly,
Richard H. Dana Jr.

Edmund T. Dana Jr.
Care of Prs. Wheeler
Burlington, Vermont

James Allison edited the first Dana article published in the July 1952 *issue of* THE AMERICAN NEPTUNE. *He was born in Rochester, Indiana. He attended Northwestern University where he received a Bachelor of Science degree and an M.A. He entered Harvard in* 1940, *received an M.A. in* 1943, *spent three years in the Navy, and returned to Harvard where he received his doctor's degree in* 1948. *From Harvard he went to Mary Washington College of the University of Virginia, where he acted as Assistant Professor of English. He spent the summer of* 1950 *abroad visiting England, Scotland, France, Switzerland, and Italy. Since then he has acted as Assistant Professor of English at Union College in Schenectady and is now with the English Department at the West Virginia Institute of Technology in Montgomery, West Virginia.*

The Colonial Sloop Mediator

BY H. I. CHAPELLE

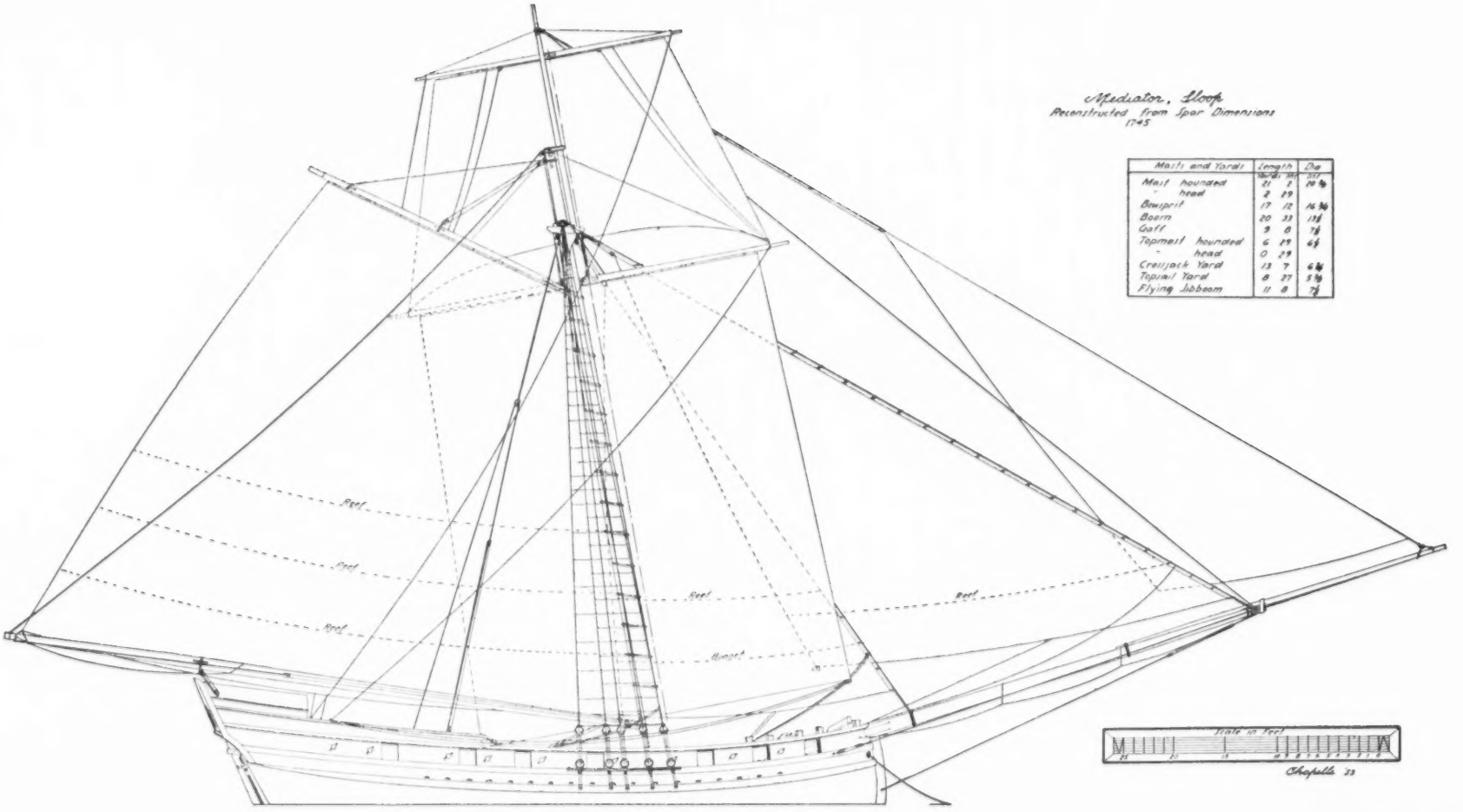
RELATIVELY little information has been available regarding the colonial sloops of the early eighteenth century. In writing of this type some eighteen years ago, I remarked, 'It would be too much to expect to find a plan of one of these sloops in the Admiralty Collection of Draughts,'[1] and used the plan of the R.N. sloop *Ferrett* of about 1711 as an illustration of what these sloops might have been in design. Time has proven that more can be expected of the Admiralty Collection than I thought.

While examining some recently acquired Admiralty Draughts at The National Maritime Museum, in the fall of 1950, one plan, of what appeared to be an early example of a Bermuda Sloop, was discovered. This was the draught of the sloop *Mediator,* undated, but remarkably complete. The plan was signed by Lock, who was a master shipwright and later surveyor during the 1740's, and so the plan could be roughly dated. It was supposed to be a Bermuda Sloop because of the characteristic stern cabin with its heavily crowned roof; this is a feature in Chapman's drawing of a Bermuda Sloop and also in many of the surviving illustrations of the type.

Recently, in 1952, it was necessary to inquire of the Admiralty Librarian concerning the acquisition of some schooners and, in writing, the sloop *Mediator* was also listed. The Deputy Librarian stated, in reply (by letter dated 14 July 1952), '*Mediator*—Is presumed to be the original name of this vessel, which is stated to have been built in Virginia 1741/2 and purchased for the Navy in 1745.'

As yet the actual Admiralty records of this vessel have not been examined; they are probably in the Public Record Office, in London; the Admiralty Librarian's Office retains only a manuscript list of the ships of the Navy, which gives mode of acquisition, date, etc., but the notation is rarely very detailed.

[1] *The History of American Sailing Ships* (New York, 1935), p. 19.



Mediator, Sloop
Reconstructed from Spar Dimensions
1745

Masts and Yards	Length (Ft. In.)	Dia. (Ft.)
Mast hounded	21 1	1 0 3/4
" head	2 29	
Bowsprit	17 12	1 4 3/4
Boom	20 33	1 1/8
Gaff	9 0	7/8
Topmast hounded	6 29	6/8
" head	0 29	
Crossjack Yard	13 7	6 3/4
Topsail Yard	8 27	5 3/4
Flying Jibboom	11 8	7/8

A hasty search through the available Royal Navy histories has not produced a reference to this sloop and it seems probable that her career in the service was undistinguished. However, her plan seems an important addition to our knowledge of colonial naval architecture so, without delaying longer in order to obtain historical information from the Public Record Office, the plan is reproduced here.

Plan One shows a careful redrawing of the lines, deck, and inboard profile. It is interesting to compare the lines of *Mediator* with those of *Ferrett*—there is a strong family resemblance which shows in the similarity of form of the midsection; the long, easy run; the rake of the ends; and the proportions. *Ferrett* was 65 feet, 7 inches on the gun deck, 50 feet keel, 20 feet, 10 inches moulded beam, 9 inches depth of hold, and 10 feet, 6 inches draft at post. The Virginia-built sloop has slightly more dead rise amidships and a slacker bilge, yet the general form is rather similar to that of *Ferrett*. The American sloop, however, has outward flare in the topsides, whereas in *Ferrett* the topsides amidships stand more nearly vertical. Both trim with some drag to the keel and have hollow garboards amidships.

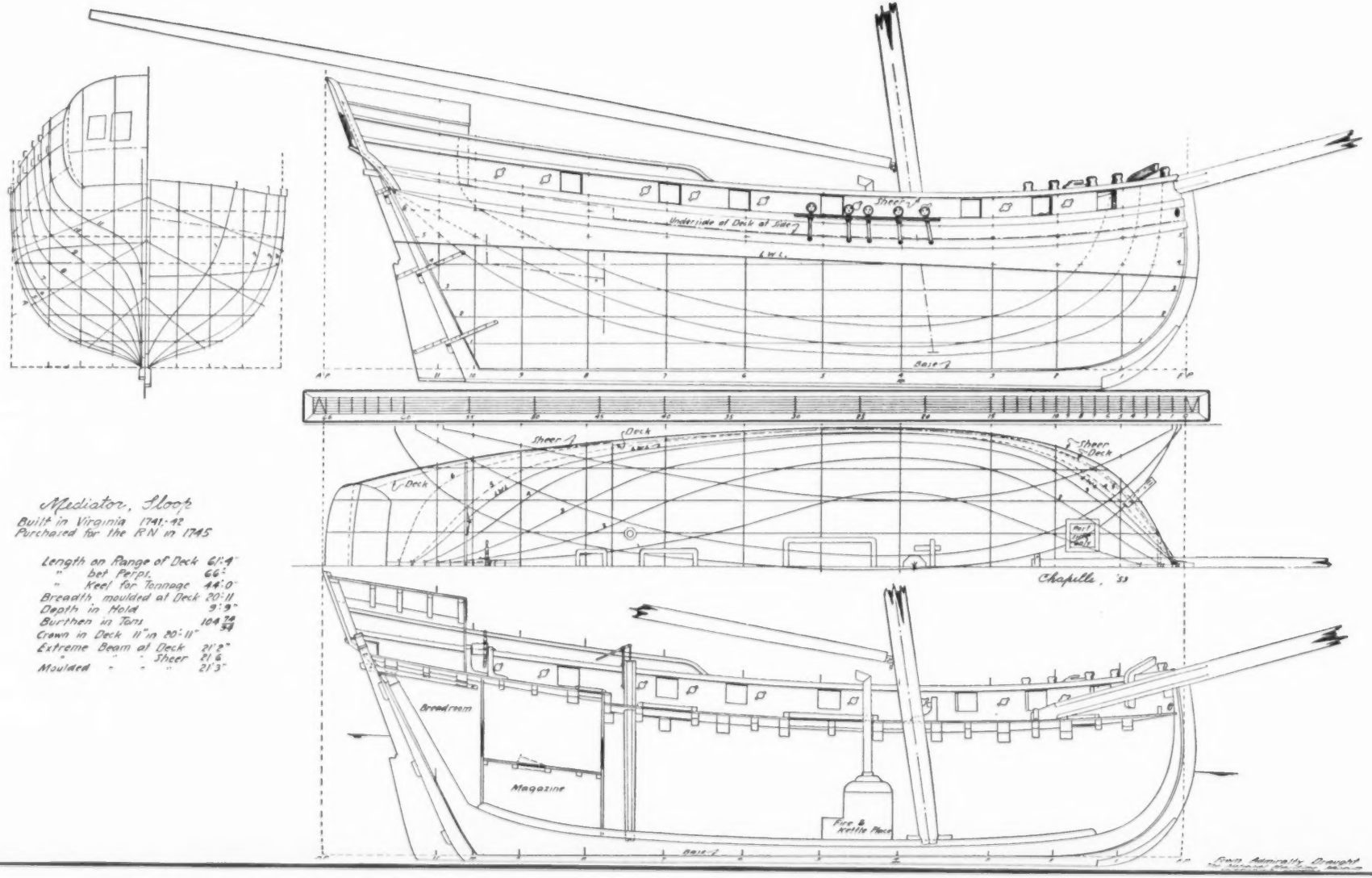
Chapman's Bermuda Sloop,[2] which may be of approximately the same date as *Mediator*, was 60 feet, 9 inches on the range of deck, 21 feet, 2 inches moulded beam, and scales about 9 feet depth of hold. However, the midsection shows marked dead rise and the rise of the floor amidships is straight, so that the turn of the bilge is high and rather hard. The Chapman sloop has more rake to the stem than *Mediator*.

It would be unwise to draw a dogmatic conclusion from this limited comparison and to state that the evidence indicates that the Virginia sloop shows closer relation to the British type than to the Bermudian. The truth of this can be shown by the plan of the 24-gun ship *Lyme*, built on the Thames in 1739-1740, which shows a vessel with very raking bow and a strongly raking post, a straight rising floor and high bilges—in short, a good example of an early 'Baltimore Clipper,' or 'Bermudian build.' This form of hull is also shown in the lines of the 'sloop' brigantine *Cruizer* of 1732, though to a less marked degree.[3] It is apparent then, that the forms of hull illustrated in both *Mediator* and the Bermuda Sloop of Chapman are readily traced to English sources through the early Admiralty Draughts. In the same way, the hull form of the early American schooners of the sharp model, such as *Marble Head*,[4] appear to have a very

[2] Fredrik Henrik af Chapman, *Architectura Navalis Mercatoria* (1768).

[3] H. I. Chapelle, *The History of the American Sailing Navy* (New York, 1949), p. 29.

[4] Ibid., p. 49.


Mediator, Sloop
Built in Virginia 1741-42
Purchased for the RN in 1745
Length on Range of Deck 61:4"
" bet Perpt. 66:
" Keel for Tonnage 44:0"
Breadth moulded at Deck 20:11
Depth in Hold 9:9"
Burthen in Tons 104 70/94
Crown in Deck 11"in 20:11"
Extreme Beam at Deck 21'2"
" " Sheer 21.6
Moulded " " " 21'3"
Underside of Deck at Side
K.W.L.
Sheer
Deck
Sheer Deck
Chapelle, '53
Breadroom
Magazine
Fire & Ashfa Place
Bals
Copy Admiralty Draught

marked similarity to *Lyme* and to a lesser degree to *Cruizer*. The logical conclusion on the limited evidence available at present is that the American 'Baltimore Clipper' model was a development of older British ideas for fast-sailing craft, through the Jamaica or Bermuda Sloop, or directly. The tumble-home stem of *Mediator* does appear in many French vessels of this date—but it also appeared in some British designs and for the present, at least, must be discounted as a sign of 'French influence.'

The deck arrangement and inboard profile of *Mediator* serves to show how the large colonial sloops were fitted. The captain's cabin was apparently in the stern cabin; the cabin below the quarter-deck must have been for the mate or served as a ward-room in naval service. No platform is shown for berthing the crew, but this may not have been in place when the lines were taken off; it shows in most plans of small naval craft of the period. It cannot be determined how the 'Fire and Kettle Place' was built, no plan view being available. Probably the structure was of brick with the kettle alongside the flue.

Recently, in these pages, the question was raised as to the probable accuracy of these old 'take-offs' of the lines of vessels.[5] It was pointed out that difficulty existed in taking off the lines of modern ships. In answer, it should be noted that modern ships are very large and that the equipment for taking off the lines of these is somewhat inadequate. There is, of course, the human factor to be taken into consideration, and so errors could always occur. However, the Admiralty had long made a practise of taking off lines and had, early in the eighteenth century, fitted certain dry-docks for this purpose and issued special instructions. A rough outline of these instructions and description of how the decks were fitted are in Peake's book, *The Elementary Principles of Naval Architecture*.[6] It will be seen from this reference that timber perpendiculars were employed and that the measurements would be reasonably accurate. It must be remembered that, in the reduction from full size to the ¼-, ⅜- and ½-inch scale used in plans, small errors in measurement are of no moment since there is a limitation to the accuracy in scaling the small drawings. The 'take-offs' must be accepted as accurate; and it is usually the intention of the men taking off lines to be accurate, for otherwise they could merely take a look at the vessel and guess at her shape. With the careful preparation indicated by Peake and the early instructions, it is evident that very great accuracy should be readily possible.

Whether or not the gun- and row-ports had covers cannot be stated.

[5] S. A. Vincent, 'Half Model of America,' THE AMERICAN NEPTUNE, XII (1952), 239-240.
[6] (London, n.d. but *c.* 1850, reprinted 1917), pp. 289-290.

The form of row-port indicates the possibility that no cover was used; the shape would permit a small opening, with the slot allowing the blade of the sweep to pass through.

The very heavy crown of the main-deck is to be noticed; scaling 11 inches in the moulded beam. The inside of the bulwarks may not have been sheathed. Contemporary drawings of small vessels indicate that this was not usual; there being a stanchion at each side of the gun-ports and, if their spacing required, one or two stanchions between. The bulwarks were apparently very lightly built in many small vessels of this period.

The only additions, in the redrawing of the lines, were to add the buttocks and the hawse hole. The gammoning of the bowsprit was probably a bolt through the bowsprit and the breast-hook shown under it; the heel being secured by an iron strap bolted through deck and the beam underneath. The iron goose-neck shown for the mainboom is questionable —jaws might have been employed. Both were in use in the 1740's and later.

Since spar dimensions were available from the original draught, it seemed desirable to attempt a reconstruction of her rig so as to show the appearance of the vessel under full sail. The lengths given for the spars allow great accuracy, though, in the case of the jib-boom, the length of doubling is not given and has been guessed at. With the spars laid out, the shape of the sails can be pretty well established, using old pictures as a check. I also had the sail plan of a Bermuda Sloop or cutter of 1778 from Chapman's collection of plans given me by Mr. William Salisbury, an English student of shipbuilding history.

With regard to the rigging, the material available is less helpful. The old pictures are rather sketchy in this matter as are Chapman's drawings of sloop and cutter rigs. From these it appears that topmast breast shrouds were rarely used, and that topmast runners were not very common. I judge the square topsail and the jib-topsail were entirely light weather sails at this time. I am also uncertain about the use of the iron-ring travellers on the jib-boom and at the clew of the mainsail—I know they were in use by about 1757 but have nothing to indicate that this was the earliest date they were used. The exact position of the fore-stay is also uncertain; in the 1778 plan and in Chapman's sketches the stay is set up inboard or at the stemhead, while some old pictures show it set up on a collar on the bowsprit a little outboard of the stem. There may have been another bobstay, set up about half-way out the bowsprit just inboard the heel of the jib-boom, which was usually placed on a quarter of

the bowsprit, not on top. Chapman shows a single bobstay in most of the small craft. I have also followed Chapman in the lead of the braces of the yards, bringing them aft, but after doing this I regretted it, as I am inclined to think they were carried to the bowsprit end (as in the Burgis drawing of a sloop at Boston Light, 1720). I also followed Chapman with regard to the lifts of the yards and boom, using single parts, but now I wish I had followed Burgis' drawing and used tackles. I think the main-boom might be stived up a little more than I show in Plan Two.

Due to the great hoist of the square course, I think it was not furled on the yard but hoisted to it. To furl on the yard would be a heavy weight aloft and cause excessive windage when the vessel was on the wind. Hence I omit foot-ropes on the yards. Chapman shows a bridle on the gaff for the peak halyards but old drawings do not. Burgis shows a top-mast runner, I have followed Chapman. It will be seen that there are many possibilities and doubts as to the mode of rigging; what I have shown is not, necessarily, correct.

The scuppers shown on the sail plan are reconstructed and are based on Chapman's Bermuda Sloop and on the brig *Badger* of 1778, which may be West Indian-, Bermudian-, or American-built. The same form of scupper is shown on the plans of the Baltimore-built three-masted schooner *Flying Fish* of 1806.[7] These all have their tops formed with a cupid's bow and indicate plainly that the bulwarks were not sheathed and that no waterway existed at deck. I think the stern ports would be glazed, but this is not shown in the original and is often omitted in the very old plans.

It should be noted, perhaps, that 'built in Virginia' may not mean that the vessel was actually built within the present state; 'Virginia-built' seems to have meant 'built on the shores of the Chesapeake' in fact. *Mediator* could carry 12 guns, 4-pounders; Chapman's Bermudian carried ten of these guns according to his list. The omission of swivel stocks on the original plan raises the question of whether or not she had such guns; I think she did and the plan of *Badger* shows that outboard stocks were not always used. Her swivel stocks are formed on the bulwark stanchions; the cap being covered, over the stanchions between the gun-ports, by an iron plate or casting fitted to allow the pivot of the swivel mount to pass through.

The original draught of *Mediator* being so complete, it is possible to avoid much reconstruction. However, it is apparent that the reconstruction of rigging and certain hull details raises serious questions and that

[7] H. I. Chapelle, *The Baltimore Clipper* (Salem, 1930), p. 47.

there is, as yet, insufficient research accomplished in eighteenth-century small craft rigs and fittings.

The plans of *Mediator* are reproduced through the courtesy of the Trustees and staff of The National Maritime Museum, Greenwich.

Howard I. Chapelle is a naval architect of many years experience who lives in Cambridge, Maryland. His historical works on American sailing ships and small craft are well known and he is a frequent contributor to THE AMERICAN NEPTUNE.

Eastern Sail Affinities

PART II

BY RICHARD LeBARON BOWEN, JR.

VI

While the evolution of the Oceanic lateen was slowly taking place on the eastern borders of the Indian Ocean, a somewhat similar evolution was taking place on the western shores of the Indian Ocean, leading from the square sail to the Arab lateen. In the following description it will be clearly demonstrated that neither the Oceanic lateen nor the Arab lateen could have had any effect on the development of the other.

The great defect of the square sail, whenever it was used with the wind forward of the beam, was that the forward edge of the sail could not be kept sharp and taut, and therefore did not perform properly. In early European square-rigged ships bowlines were very effective, and in the Far East the Chinese successfully developed battens. However, on a small craft the simplest and most effective device was to carry the tack forward and to set up on it as strongly as practicable. This has the unintended effect of tilting the yard so that the sail at first glance looks like a regular lug sail; this square-headed lug has been called a 'half-lug.' The sail is still essentially a square sail, but set in a lug style. A further change may be made by moving the yard slightly aft, so that the unbalanced weight of the yard and the sail aft would further tauten the luff.

Hornell[77] has shown that while the boat designs and sail rig of the northwest coast of India are strongly influenced by Arab designs, the craft of the Malabar coast are purely indigenous types of dugout canoes and catamarans. On the northern Malabar coast at the port of Mangalore there are local plank-built enlargements of dugouts used for the transportation of clay to the tile factories in the town. These craft are rudderless and carry a single square sail that is absolutely square. The photograph that Hornell[78] presents shows the yard hung at the middle and the

[77] J. Hornell, 'Sailing Craft of Western India,' *Mariner's Mirror*, XXXII (1946), 195-217.

[78] Ibid., Plate 4.

tack boused down far forward (Fig. 16a). Worcester[79] relates that some river junks using square sails transform them to lugs in a similar manner when they have to sail to windward. A similar sail arrangement is found at Singapore (Fig. 16b).[80]

Along the whole coast of South Arabia one finds today hundreds of square sails on dugouts and sewn boats used by the fishermen. Here the yard is shifted aft so that the additional weight aft helps straighten the luff (Fig. 16c). Even when sailing downwind these sailors usually keep the yard in an unbalanced position, hitching the tack to the gunwale and hitching the sheet to a paddle stuck overboard. The same arrangement is also used on the East African coast (Fig. 16d).[81]

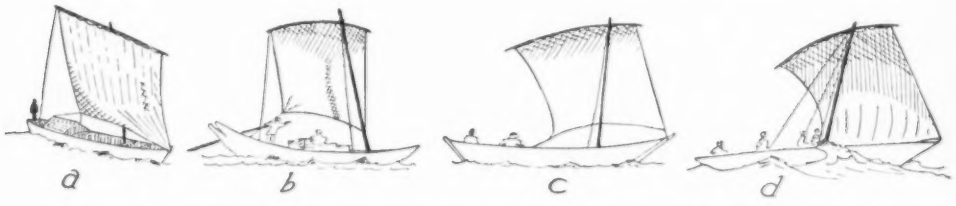


Fig. 16. Primitive square-headed lugs or half-lugs. *a*, dipping lug in India. *(Original sketch by the author from a photograph by Hornell.)* *b*, standing lug in Singapore. *(After H. W. Smyth.)* *c*, dipping lug on South Arabian sewn boat. *(Original.)* *d*, dipping lug on East African fishing canoe. *(After H. W. Smyth.)*

The next step in the development of a more efficient sail from the square-headed lug was to change the cut of the sail so that it was a jib-headed lug. Several examples of this type of development survived into historical times in both India and Arabia. Most of these sails were hung from their centre, rather than from the fore part as was the Arabian square sail just mentioned. Paris[82] has given numerous drawings of just such a sail in use in Oman in the early nineteenth century (Fig. 17b) and Viscount Valentine[83] has shown that a similar sail was in use in Massawa at about the same time. On the very south tip of India between India and Ceylon there are also many examples of this dipping lug sail to be found.[84]

79 G. R. G. Worcester, *Junks and Sampans of the Yangtze* (Shanghai: Inspectorate General of Customs, 1947), I, 67.

80 H. W. Smyth, *Mast and Sail in Europe and Asia* (London: Wm. Blackwood and Sons, 1929), p. 389.

81 Ibid., p. 351.

82 F. E. Paris, *Essai sur la Construction Navale des Peuples Extra-Europeéns* (Paris: Bertrand, [1841]), Plate 8.

83 V. Valentine, *Voyages and Travels to India, Ceylon, The Red Sea, Abyssinia and Egypt in 1802-1806* (London, 1811).

84 J. Hornell, 'The Origins and Ethnological Significance of Indian Boat Designs,' *Memoirs of the Asiatic Society of Bengal*, VII (1920), 160-167.

Some of these are hung almost in the centre, while others are moved slightly aft (Fig. 17a).

The next step in the development of the lug was to shorten the luff further; this increases the angle at the head of the sail. In doing this the Arab lateen was developed. Today the longest Arab luff is to be found on the sails of the seagoing craft of Oman, which have a luff that is one third the length of the leech. In the Persian Gulf the luff is about twenty per cent the length of the leech, and in the Red Sea and the Gulf of Aden it is the shortest of all Arab sails—only five per cent (Fig. 18). Technically, a sail with a luff such as these Arab lateens should be called a 'settee' sail, but the sails of the Arabs have been called 'lateen' for so long that this type of quadrilateral sail can thus be called 'lateen' by common use.

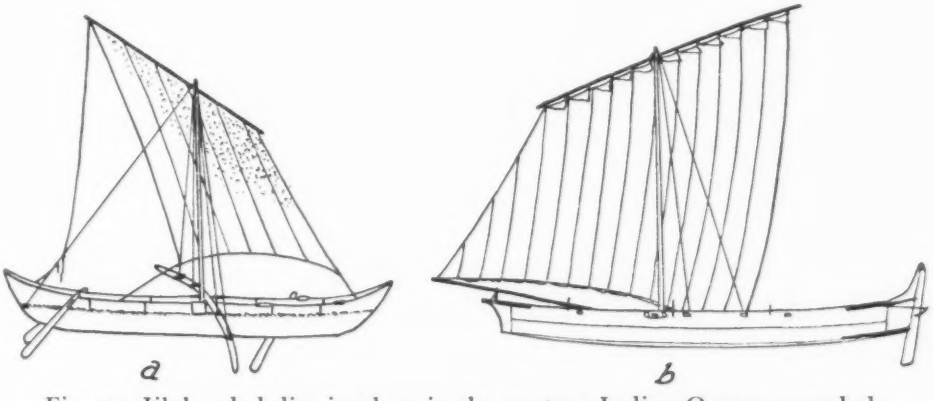


Fig. 17. Jib-headed dipping lugs in the western Indian Ocean. *a*, on balance board fishing boat of South India. *(After Hornell.)* *b*, on sewn boat of Oman. *(After Paris.)*

The final step in the development of the lateen from the square sail is the perfectly triangular sail without any luff (Fig. 18). When the luff was finally done away with, the rig was actually simplified, for it was not necessary to have tackle on both the lower yard end and the tack. This triangular lateen is known only from the Nile River in Egypt and the Mediterranean (with the exception of the triangular sail on a catamaran in India, which has been shown to be of Indonesian origin).

All of these half-lugs, lugs, and lateen sails we have just considered have certain characteristics in common:

(1) There is no boom at the foot of the sail. This applies to the Indian and Arab lugs and lateens and to the Mediterranean lateens, but not to some of the lug sails of the Mediterranean (which are of later development).

(2) The leech is vertical. This of course does not apply when the tack is boused down forward. However, when the sail is hanging free on the yard the leech of the sail hangs down straight.

(3) Likewise the seams are all vertical. This simply means that the seams are run parallel to the leech, rather than with the head as are the older Oceanic sails.

(4) In many of the sails the yard is hung from the centre: this is true of all Persian Gulf and Gulf of Oman craft, and many Mediterranean craft. In others the yard is hung so it is slightly aft of the centre: this is true of many of the Mediterranean lateens and Indian lateens and lugs. There are some Indian lateens and lugs that have the halyard fastened to the forward third of the yard, but these are in the minority. There are two rare cases in India where there are lateens on catamarans with the hal-

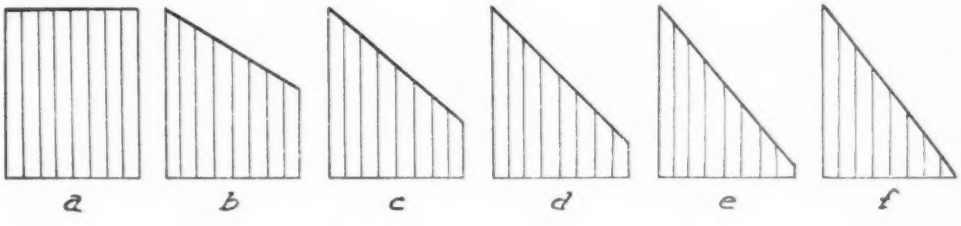


Fig. 18. The evolution of the Arab and the Mediterranean lateen sails. *a*, square sail; *b*, dipping lug of India and Arabia; *c*, present day sails of Oman; *d*, present day sails of the Persian Gulf; *e*, present day sails of Aden and the Red Sea; *f*, triangular sails of the Mediterranean. None of these sails have booms at the foot of the sail. *(Original.)*

yard on the forward quarter of the yard; however, these have been shown to be of Indonesian origin, and thus are Oceanic lateens rather than Arab lateens.

Together these points demonstrate quite clearly that the Arab and the Mediterranean lateen had a common origin from a square sail without a boom at its foot. This is in distinct contrast to the Oceanic spritsail and lateen which, as we have seen above, have completely different characteristics, showing their line of evolution (Fig. 13):

(1) There is always a boom at the foot of the sail (or on the after edge of the Oceanic spritsail).

(2) The leech is never vertical. On the Oceanic spritsail it technically forms the head of the sail. The sail in all instances was confined between two spars and the edges bounded by the spars were equal or almost so.

(3) All seams in the sails showing the more ancient method of fabrication ran parallel to the head (of lateens) or the forward sprit (of spritsails). Certain of the sails did have the seams parallel to the leech, but these were later in age.

(4) With lateens the yard was often hung from far forward in the more primitive designs, but later designs did have the yard hung from the centre in many cases.

No comparison of the Arab lateen with the Oceanic lateen is complete without a description of how the two are sailed. Neither could be tacked head-to-wind, because the fore part of the sail backed against the mast and formed pockets sufficiently large to heave the vessel to or to decrease its sailing efficiency. Besides this, the Micronesian lateen was not tacked since it was usually a single outrigger and the outrigger was kept on the windward side; this meant that the vessels had to be turned end for end on a change of tack. The craft on which the Arab lateen was used did not suffer from this peculiar defect.

Not being able to tack into the wind, the Arab has to lay the craft off the wind and head downwind. When dead downwind the sheet is released, the yard rights itself, and as the boat is brought across the wind the sheet is carried around the mast and aft. In the process the sail is actually turned inside out. As soon as the sheet is brought aft, the vessel is brought into the wind and is on the other course.[85] It should be noted that the development of this technique was probably a chance discovery, discovered when an Arab first lost a sheet as he was sailing downwind, and upon retrieving the sheet found that he had come about. There can be absolutely no doubt that when the lug was first developed the sail had to be taken down and set up on the other side when it was desired to change the tack. In fact, today in the Persian Gulf many of the sailors anchor, lower the sail, and change the yard to the other side when they wish to change tack. The way the Arabs sail it is not difficult to imagine them loosing the tack, for something always seems to be going wrong on the dhow.

Where the Arab has to lay off and head downwind, the Micronesian simply lays off until the wind is directly abeam; the outrigger is of course to windward (Fig. 19). The sheet is eased, the tack lashing on the forward part of the canoe is removed, and at the same time the forward masthead stay is slackened and the after one is hauled up. Then the sail is swung aft on the lee side of the mast, and the tack is lashed down. The steering oar is dropped over and picked up on the other end where it is set up.

[85] For a more complete description of this and a diagram, cf. R. LeB. Bowen, jr., 'Arab Dhows of Eastern Arabia, THE AMERICAN NEPTUNE, IX (1949), 122-129.

Within less than a minute the sheet is hauled in and the craft is away on the other tack.

It is important to note that the development of the Micronesian design and technique of tacking could not have been discovered by chance by loosing the sheet in the same manner as with the Arab lateen. The practical use of the single outrigger required considerable thought, because at first the sail had to be set up on the other end of the vessel when it was turned end for end. Even the development of a single central mast to take

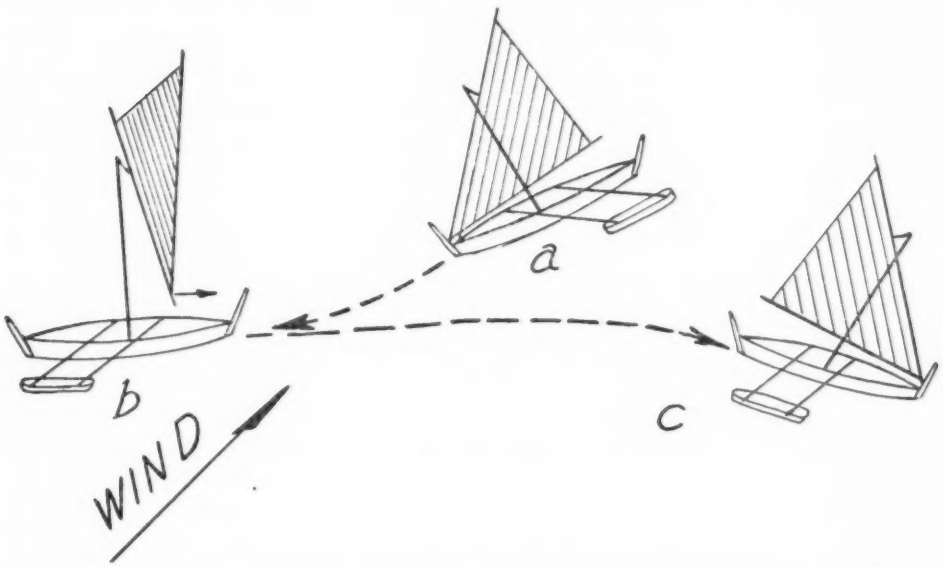


Fig. 19. Tacking a Micronesian lateen rigged single outrigger. *a*, on the port tack with the outrigger to windward; *b*, the wind is brought abeam, the mast is righted lifting up the tack of the lateen, which is carried to the other end of the hull, and allowed to settle in its socket as the mast leans the other way; *c*, off on the starboard tack with the outrigger still to windward. The whole manœuvre takes less than one minute. *(Original.)*

the place of moving the mast to the other end (or having two masts) could not have been discovered accidentally.

While the manœuvres of the Arab and Micronesian in changing tack have certain similarities, in that the sail is turned inside out, the similarities stop here. The great difference is of course the fact that the Arab changes tack when headed downwind, while the Micronesian changes with the wind abeam. Even greater is the fact that the Micronesian turns his craft end for end. So great are these differences that it can be said that

neither of these could have had any influence on the other. The only similarity is that the sails are turned inside out; the outstanding point is that two such different techniques for accomplishing the same end could be developed.

* * *

Probably one of the most hotly argued topics of nautical history is the evolution of the lateen sail. This is mainly because of an almost complete lack of pictorial material from the fifth to the twelfth centuries, and also because many writers who have attempted to solve the problem have not attempted to assemble the facts. In distinct contrast the development of the full-rigged ship can be traced almost step by step from the abundance of material which increases progressively after the thirteenth century.

Generally scholars have argued whether the Arab or the Oceanic lateen evolved first, and therefore which influenced the development of the other. There is also another school which has argued for the Mediterranean origin of the lateen sail. The most fanciful theories about the Mediterranean origin of the lateen sail (and the lug sail) have been proposed by T. C. Lethbridge.[86] As one of his theories he proposes that the triangular lateen sail of the Mediterranean developed from the square artemon sail that the Romans used as a small head sail. He then states that

> Sooner or later almost every form of fore-and-aft device developed out of the lateen. You could cut off the forward part and set it separately, thereby getting a jib. You could combine this jib with a mainsail hoisted on a tilted yard, and this mainsail is a lug sail. You could secure the head of the mainsail to a spar rotating against the mast itself, and this became a gaff sail.

Lethbridge, of course, has the evolution proceeding in the reverse direction from what the facts seem to indicate. The evidence clearly indicates that the standing lug was a link in the continuous chain of changes from the square sail to the lateen.

Those who would have the lug evolving from the lateen have not examined the facts. Morris[87] has also assumed that the lug evolved from the lateen. What has apparently confused everyone is the fact that the lateen is known to have existed in the Mediterranean as early as the ninth century, but the lug does not appear until after the seventeenth century. The conclusion that everyone has drawn from this in the past is that this in-

[86] T. C. Lethbridge, *Boats and Boatmen* (London: Thames and Hudson, 1952), pp. 160-164. However, Lethbridge will be the first one to admit that he is wrong, for he states (p. 189) that 'I do not mind in the least if these ideas can be shown to be wrong. Some of them are no doubt wrong.' Before this he stated (p. 9) that 'I do not mind in the least if someone proves every theory in the book to be wrong. If that can be done, then knowledge has been advanced.'

[87] E. P. Morris, *The Fore-and-Aft Rig in America* (New Haven: Yale University Press, 1927), p. 27.

dicates that the lug obviously developed from the lateen. However, it seems very clear now that what this indicates is that European sailors, who were the West's first great explorers, were bringing back designs of sails which they found existing in the Eastern Seas!

When nautical evolution has taken place over a long period of time in a rather wide area there are invariably examples of the more primitive stages to be found in existence long after the final stage has emerged. In the Mediterranean we find the absolutely triangular lateen sail appearing suddenly in the ninth century; nowhere is there any evidence of more primitive forms. There are many lugs in the Mediterranean, at the present, but most of these have booms at the foot of the sail, thereby showing their Eastern inspiration. Hourani[88] states that 'the mere fact that this type of lateen no longer exists in the Mediterranean proves nothing.' I disagree with this conclusion strongly; the absence is of the utmost importance.

On the Indian Ocean in Arabia and in India we do not find a single example of a triangular lateen (excepting an Oceanic lateen on a catamaran), but we do find a complete succession of sails from the square through the lug to the quadrilateral lateen (Fig. 18). This would seem to be proof for the Eastern (but not necessarily Arab or Indian) origin of the lateen sail. In this connection it is interesting to note that the common sail of the Red Sea until very recently was a square mat sail.

Thus the evidence seems to indicate that the Mediterranean lateen was developed from the Arab lateen. However, what influence the Arab lateen and the Oceanic lateen have had on each other is not so evident. If only for distributional reasons, it would probably be safe to say that neither had any influence on the other. At the period at which both were developing, the Arabs were not travelling to Indonesia or Oceania, and the Oceanics were not travelling westward. However, as we have seen above, the Indonesians were making frequent voyages to the west, to India, Arabia, and Madagascar. Since it has been shown that the Oceanic spritsail and the so-called Oceanic lateen probably developed in Indonesia, it might be expected that one of these rigs would be found in some of the western colonies of the Indonesians. As has been shown above, the only Indonesian evidence in Madagascar and Arabia so far as sails are concerned is the proto-Oceanic spritsail. While this is found in Ceylon too, there are other rigs on the Indian side of Ceylon that undoubtedly have an Indonesian origin: these are the lateen sails found on catamarans.

[88] G. F. Hourani, *Arab Seafaring* (Princeton: Princeton University Press, 1951), p. 103.

Now the question comes up as to whether the Oceanic lateen introduced into India influenced the development of the Arab lateen. The answer to the question lies in the relative chronology of the various sails: whether the Oceanic sail was introduced before or after the development of the Arab lateen. However, the date of its introduction is not known. Since all Oceanic and Indonesian lateen sails are triangular, it must be assumed that this Indian Oceanic lateen was originally triangular. If this type of sail influenced the development of the Arab lateen directly, we

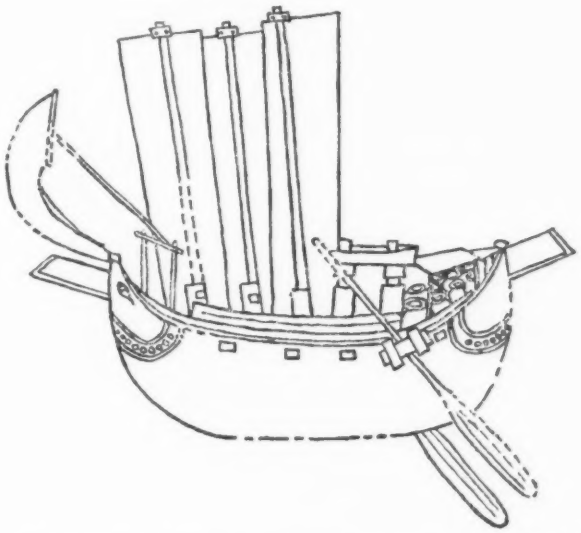


Fig. 20. Seventh-century three-masted Ajanta vessel showing three sails of obvious Chinese influence. Note the bow spritsail on the *artemon* mast. The two projections in the background at either end of the hull are either an outrigger or a part of the dock. The fact that no outrigger booms are shown would seem to indicate that they are part of the background. *(Original sketch by the author from a photograph of the fresco.)*

would expect that the Arab lateen would have been triangular, and we might also expect to find the yard hung from the fore part, a characteristic of the Oceanic lateen.

However, since we have a complete succession of sail forms from the square through the lug to the quadrilateral Arab lateen, most of which are hung from the centre of the head, it would seem that the Oceanic lateen did not have any appreciable influence on the development of the Arab lateen. Even if this Oceanic lateen were introduced before the final development of the Arab lateen, it could have escaped influencing any

but the neighbouring craft because of one fact: the rig was carried on fishing boats. I have tried to show in several instances above that the fishing craft of a people usually carry the more primitive rigs, and that it is the voyaging or trading craft of a group that develops or adopts new or different sail rigs, mainly because they are carried mechanically to other groups. Fishermen never travel farther than their fishing grounds (although even for primitives this may be as much as 50 miles).

The fact that a single outrigger canoe is found on the west coast of India around Bombay might seem to indicate that at one time the Oceanic lateen extended over more of India. However, the Indian outriggers today carry lug sails, which might seem to indicate that the original outriggers carried a proto-Oceanic sprit; in Ceylon and Madagascar they do.

In considering whether or not India could have been the home of the Arab lateen sail we have a most important piece of evidence in one of the Ajanta frescoes, which is dated circa A.D. 630 (Fig. 20). While most writers have realized that there is a Chinese influence in the tall, rectangular sails of the sea-going vessel shown, none have realized the full significance of the work. For some strange reason most writers have gone to extreme lengths to prove that the Ajanta ship here illustrated is not an indigenous Indian craft; most of them have claimed that it is a Chinese vessel of the period. Only Mookerji[89] has correctly labelled this vessel as Indian; however, he also claims that the Boro Budur ships in Java are Indian (we shall see later that they are indigenous to Java). In claiming that this craft is Chinese, Hornell[90] states that Mookerji 'falls into the grievous error of claiming these craft as Indian-built vessels.'

Donnelly[91] states that this vessel is Chinese. As 'proof' of this he states that the Boro Budur sculptures 'show us that the Indian craft of this period were of an entirely different type.' Hadi Hassan[92] claims that this vessel is Persian.

There is no doubt that the sails of this Ajanta craft are of Chinese origin or inspiration. However, the hull of the vessel indicates that it is undoubtedly indigenous; there is certainly no resemblance to the junk hull. The hull bears strong resemblance to the ships shown on the second century A.D. Coromandel (southeast coast of India) coins and to the recently extant Sinhalese coaster (Fig. 25b) in its double-ended construction. The projection of beam-ends through the skin of the planks is not of typical

89 R. Mookerji, *Indian Shipping* (Bombay: Longmans, Green, and Co., 1912).

90 J. Hornell, 'Origins and Ethnological Significance of Indian Boat Designs,' *Memoirs of Asiatic Society of Bengal*, VII (1920), 203.

91 I. A. Donnelly, 'Early Chinese Ships and Trade,' *Mariner's Mirror*, XI (1925), pp. 344-354.

92 H. Hassan, *A History of Persian Navigation* (London: Methuen & Co., Ltd., 1928), pp. 90-91.

Chinese design, but rather has affinities with Egypt, India, Burma, and Indonesia.

In describing the Indo-China trade in the fourteenth century, Marco Polo frequently referred to the 'Indian ships' engaged in the trade.[93] Ibn Batuta (thirteenth century) stated that the voyage from India to China could only be undertaken in large vessels built at Zaitun (near Amoy) and Sin Kilan (Canton) in China.[94] This might seem to indicate that by

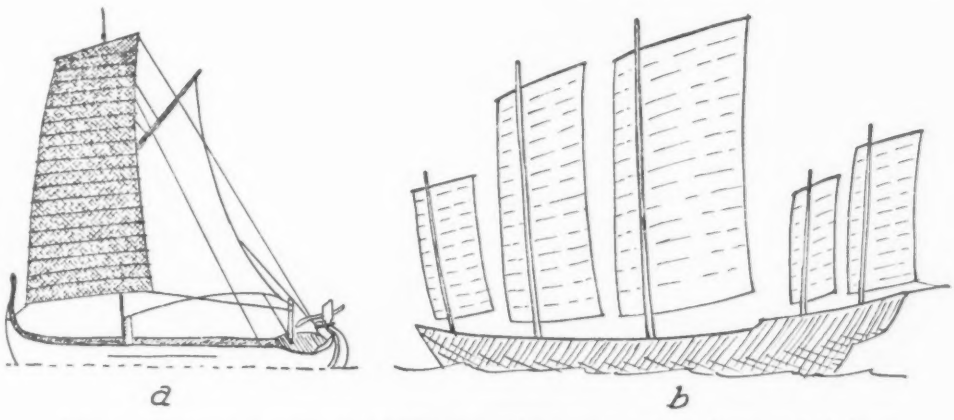


Fig. 21. *a* shows a mat sail of Chinese origin on a fishing boat at Minicoy Island off South India. *(After Hornell.) b* shows the same type of sails on a five-masted Chinese junk off Amoy. *(Modified from H. W. Smyth.)*

this time the Chinese were building the Indian vessels used in the trade, or it could mean that only the Chinese were active in the deep-sea trade.

Today there are sails of identical shape existing in both India and China. In the Maldive Islands (typified by Minicoy Island, about 250 miles off the southwest coast of India) we find an Ajanta type of sail that is a very tall dipping lug sail.[95] This rig is peculiarly hermaphrodite, as the tall mat sail with battens has a cotton fore-and-aft gaff sail on the same mast (Fig. 21a). This same type of sail is also found on the east coast of India on Chilka Lake, the greatest of all Indian backwaters: Hornell[96] shows a tall mat sail (three times as high as wide) with battens, on a large dugout. The sail is supported by two masts fastened to either gunwale; there are no halyards.

In China today we find this same type of tall lug sail around the mouth

[93] H. Yule, *Ser Marco Polo* (London: John Murray, 1875), I.

[94] Ibid.

[95] J. Hornell, 'Origins and Ethnological Significance of Indian Boat Designs, *Memoirs of Asiatic Society of Bengal*, VII (1920), 181.

[96] Ibid., Plate V.

of the Yangtze and at Amoy.[97] In China it is not exceptional to find five-masters (Fig. 21b). The Chinese origin of the Maldive type of sail is clearly shown by the battens (here eighteen) in the sail, as well as the proportions of the sail.

There is a Sanskrit manuscript which contains a short treatise on ancient Indian ships, and relates that at that time ships were one, two, three, or four masted.[98] Today, the only four-masted local vessels that we find in the whole Eastern Seas are of the tall lug type. In the western part of the Indian Ocean all the three masters can be shown to be of European influence (but carrying lateen sails).

The evidence shows that the tall Chinese lug was used in India from about the start of the Christian era up to the present:

(1) Sanskrit records mentioning four-masted vessels undoubtedly refer to the Chinese lug.

(2) The fact that the Ajanta fresco of the seventh century shows a three-master with this tall lug would seem to indicate that the sail was in common use then in India.

(3) The sail type is still found today in the Maldive Islands off the southwest coast of India and on the east coast at Chilka Lake.

Since Hornell[99] has shown that the boat designs of the north-west coast of India are predominantly Arab, it can be supposed that the lateen sails that they carry are likewise of Arab influence and have been introduced since the seventh century when Islam started its great rise. Before this time it must be assumed that the sails of the large trading vessels of the west coast of India were tall lugs introduced by or borrowed from the Chinese at an early age.

It has been pointed out that the lateen sail found in the Persian Gulf and the Gulf of Oman has the yard hung from the centre, but that in general Indian craft have both the lateen and the lug hung from the fore part of the yard. The fact that all the Persian Gulf and Gulf of Oman lateens have the yard hung from the centre would seem to indicate their closeness to the direct line of ancestry from the square sail. Likewise the fact that most Indian sails—both lateen and lug—have the yard hung from the forward part would seem to indicate that they are removed from the direct line. This unbalanced position of Indian sails may be due to several influences:

[97] H. W. Smyth, *Mast and Sail in Europe and Asia* (London: Wm. Blackwood & Sons, Ltd., 1929), pp. 465, 466-469.

[98] R. Mookerji, *Indian Shipping* (Bombay: Longmans, Green and Co., 1912), p. 25.

[99] J. Hornell, 'Sailing Craft of Western India,' *Mariner's Mirror*, XXXII (1946), 195-218.

(1) An Indonesian influence from the Oceanic lateen introduced to the east coast;

(2) A legacy to an early custom from the use of the half-lug;

(3) European influence dating back to the days of the Portuguese in the sixteenth century.

It would seem that either of the latter could explain this. In the Mediterranean the lateen sail had evolved to the unbalanced position in many ports, although when introduced it was hung from the centre. The Portuguese had many lateen-rigged vessels in the western part of the Indian Ocean, and it seems that they may have had as much to do with the present position of many Indian lateens as anyone.

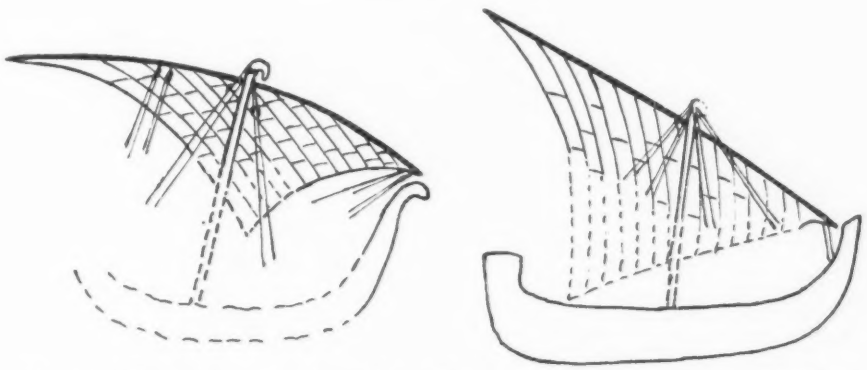


Fig. 22. Ninth-century triangular sails of the Mediterranean. *(Original sketches by the author from photographs by the Bibliothèque Nationale, Paris.)*

In summary it would seem that the evidence indicates the following points about the Arab lateen:

(1) The loose-footed dipping lug was probably evolved somewhere in the western Indian Ocean, either in Arabia or India, although it may have been influenced by Chinese models;

(2) The Ajanta ship would seem to indicate that tall Chinese lug sails were in use in India at least by the seventh century;

(3) The Arab lateen with its short luff was probably developed either in the Persian Gulf or the Gulf of Oman;

(4) The lateen sails found on the west coast of India are an extension of the Arab lateen, and may have been influenced by the Portuguese;

(5) Neither the Oceanic lateen nor the Arab lateen apparently had any effect on the development of the other, although an Oceanic lateen was introduced to the east coast of India at a rather early time, and was altered by contact with the Arab lateen.

When one tries to reconstruct the relative chronology of the development of the Arab lateen, there is not much evidence available. We do not have one shred of proof that the lateen sail was used in the western Indian Ocean before the arrival of the Portuguese. The famous Boro Budur sculptures of Java dated in the eighth or ninth centuries A.D. show only a wide, rectangular balance lug sail. The seventh-century Ajanta frescoes show tall lug sails of obvious Chinese origin. Early Arab writers and geographers writing in the ninth and tenth centuries give us the first clue by referring to a ship's sail as seen from a distance as looking like a whale's fin.[100] This is certainly a good simile for the lateen sail. Numerous miniatures from Arab manuscripts of the thirteenth to sixteenth century show only square sails, and a Persian miniature of the sixteenth century shows what is apparently meant to be an European square-rigged ship.

The first known pictures of the lateen sail come from the Mediterranean from a ninth-century Greek manuscript. These show a purely triangular lateen sail hung from the centre of the yard with a vertical leech with seams parallel to the leech (Fig. 22). The assumption must be made that the lateen sail was introduced by the Arabs following the founding of Islam. Since the sail when introduced must have had a short luff, and since the triangular lateen is unknown in the Indian Ocean (except the triangular sail on an Indian catamaran of obvious Indonesian origin) the sail must have been introduced soon after Islam started in the seventh century. Thus it seems probable that the Arab lateen was developed some time before the seventh century in either the Persian Gulf or the Gulf of Oman.

VII

The earliest efficient sea-going sail was developed by the Egyptians on the Nile River back at the dawn of history. Egyptian vessels were sailing on the Red Sea from at least the Fifth Dynasty (circa 2470 B.C.), and in the Sixth Dynasty (circa 2341-2181) quite frequent journeys were made both by land and sea to the land of Punt, probably the Somali coast facing Arabia. In the Middle Kingdom (circa 2000-1800) the Pharoahs sent expeditions to Punt, and later in the New Kingdom Queen Hatshepsut (circa 1500 B.C.) sent her famous expeditions shown in the Dayr el-Bahri reliefs to Punt. The sails on Queen Hatshepsut's ships are long and narrow (wider than they are high), and confined between two yards. However, by about 1000 B.C. the Egyptians had abandoned the boom at the foot of the sail.[101] While it is clear that the Egyptians were sailing the

[100] G. Hourani, *Arab Seafaring* (Princeton: Princeton University Press, 1951), p. 103.
[101] C. Torr, *Ancient Ships* (Cambridge: University Press, 1895), p. 79.

length of the Red Sea with apparent ease, there is no proof that they ever sailed out into the Indian Ocean, or to India. However, there is evidence that they either sailed or migrated to Indonesia, bringing the sheer mast and the wide, rectangular sail with a boom. This was probably sometime in the third millennium B.C., since the sheer mast ceased to be favoured in the Sixth Dynasty.[102] It seems that this may possibly be equated with the maritime activity of the Sixth Dynasty.

Following the decline of Egyptian power, the Phœnicians became the mariners of the Red Sea. Solomon (circa 974-942 B.C.) sent his Tyrian sailors to Ophir to bring back gold; other products from Ophir consisted

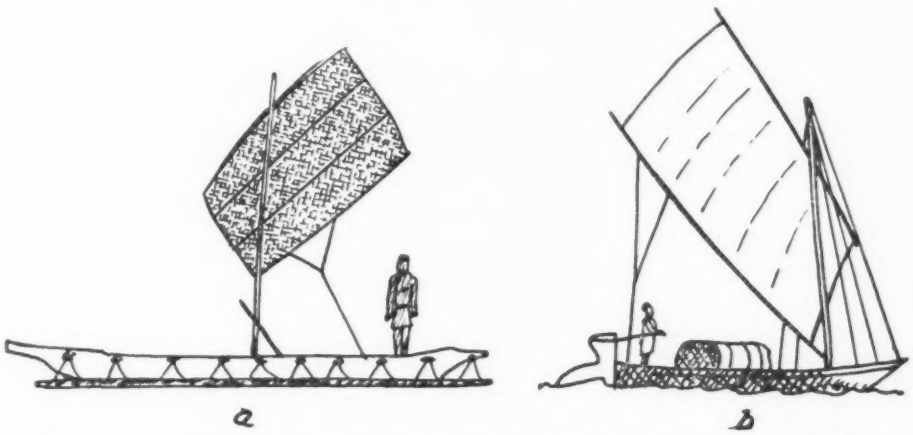


Fig. 23. Rectangular balance lugs. *a*, mat sail made from interplaited palm leaves on a single outrigger in eastern New Guinea. *(Original sketch by the author from a photograph published by Haddon.) b*, on the *nuggar* of the upper Nile. *(Modified from H. W. Smyth.)*

of silver, jewels, ivory, apes, and peacocks. In view of the commodities, many scholars feel that Ophir must be India. The Phœnicians used a square sail without a boom, similar to the Egyptian sail of about 1000 B.C.

On the upper Indus there is today a sail used on certain river craft, that, if it was not introduced by direct contact with Egyptian sailors, must at least have been of Egyptian inspiration in its shape (twice as wide as high) and the boom at the foot.[103] A sail of the same proportions is also found in Indonesia and Melanesia, although it is carried as a balance lug rather than in the horizontal square position like the original Egyptian prototype. It seems that this sail was adopted by the Sumatrans and the

[102] J. Hornell, *Water Transport* (Cambridge: University Press, 1946), p. 225.

[103] H. W. Smyth, *Mast and Sail in Europe and Asia* (London: Wm. Blackwood & Sons, 1929), p. 336.

Javanese at an early date, and that it was modified to the existing Indonesian and Melanesian types of lugs.

It is very difficult to see how the Egyptian square sail could ever sail to windward with any success. However, by the simple expedient of dipping the whole sail, a rig was developed that could be pointed well into the wind. Such a sail still exists in Melanesia (Fig. 23a) in the Massim District (eastern tip of New Guinea and the neighbouring islands). Here we find a sail twice as wide as it is high tipped at a 45 degree angle; there is also a local variety which is oblong with rounded corners.

This same, identical type of sail is also found on the upper Nile River on the *nuggar*, a craft embodying the primitive, frameless construction of the river craft of ancient Egypt (Fig. 23b). It seems certain that the idea did not spread from the Nile to Indonesia, for this must have been a relatively recent development (relative to the ancient Egyptians) and there certainly was no direct marine communication between ancient Egypt and the East after 1000 B.C. However, Hornell[104] has shown that a type of canoe found on Lake Victoria is very probably of Indonesian origin, so if the *nuggar* sail is not of parallel Egyptian invention, it is very probably of Indonesian origin. Evidence of its Indonesian origin would seem to be the split sheet seen on some of the craft (Fig. 23b). This is found on various Oceanic craft, but is not seen in the Indian Ocean or the Mediterranean. The sail of the *nuggar* is furled or reefed around the lower yard by means of a turning 'handle' made of a short stick inserted crosswise through the heel of the boom. When this handle is lashed to the mast, it prevents the boom from unwinding. Identical handles are found on many of the rectangular lugs of Indonesia to-day.

Chatterton[105] states that the Egyptians developed the balance lug seen on the *nuggar* several centuries before Christ, and that it spread east and is today found on Javanese craft. The great fallacy in this line of thought is that Javanese craft with this type of sail invariably have the rectangular sail spread between a yard and a boom. Since the boom was abandoned by the Egyptians by at least 1000 B.C., this type of sail could not have evolved on the Nile after 1000 B.C. We have an abundance of material on Egyptian sails before 1000 B.C., but never is such a sail shown. Also, the Javanese craft mentioned by Chatterton usually have a sheer mast, which as we have seen was probably not used much after 2000 B.C. Thus the Indonesian rectangular balance lugs must have been evolved in Indonesia,

[104] J. Hornell, 'Indonesian Influence in Africa,' *Man*, *28* (1928), pp. 1-4.

[105] E. K. Chatterton, *Fore and Aft Craft and Their Story* (Philadelphia: Lippincott Company, 1928), pp. 28-30, 41.

from an Egyptian prototype and spread to the upper Nile sometime in the middle of the Christian era.

The next step in the development of the rectangular lug sail in Indonesia was the type of sail seen in the now well-known Boro Budur sculptures (Fig. 24). Here a sail of ancient Egyptian proportions has been moved aft and dipped to form a more efficient type of lug sail (a balance lug) for working to windward. The Boro Budur sculptures, dated in the eighth or ninth centuries A.D., indicate that this development probably

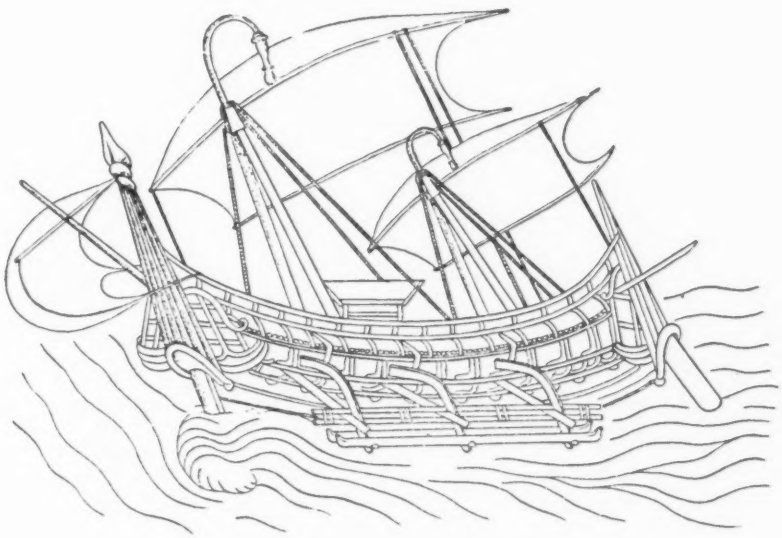


Fig. 24. Javanese voyaging outriggers of the eighth or ninth century A.D. Note the balance lugs and the bow spritsail on the *artemon* mast. *(After Hornell.)*

took place considerably before this period, so well developed are the craft and their rigs. We may accept Java as the home of this design of sail; from here the sail spread to various other areas in Indonesia and Melanesia. Many writers have claimed that these ships were Indian ships, but the fact that this type of sail today has such a wide distribution in Indonesia, but none in India, would seem to be *a prior* evidence for its Indonesian origin (Fig. 12). An Arabian claim has even been proposed for these sails.[106]

The Boro Budur ships apparently had sheer masts. A tripod mast, made of three bamboos, two in a vertical sheer with the third forward, is

[106] M. Longworth Dames, *Man, 18* (1918), art. 71, p. 128.

found on many craft in Burma and on the Red River in Indo-China. The rectangular sail with the tripod mast is found today in the Sulu Sea area of the Philippines, in the Moluccas, in the Celebes, and in the north-west corner of New Guinea. However, the tilted rectangular sail (without the tripod) has a much wider distribution, and is found in Java, Borneo, and a few other places in Melanesia. In the Celebes and the Moluccas the rig is almost unbelievably identical to the Boro Budur prototypes, with a large mast and sail forward and a smaller mast and sail aft. The fore-edge of many of the modern sails is cut in a crescentic pattern for the obvious purpose of keeping the luff of the sail taut when the sail is pointed into

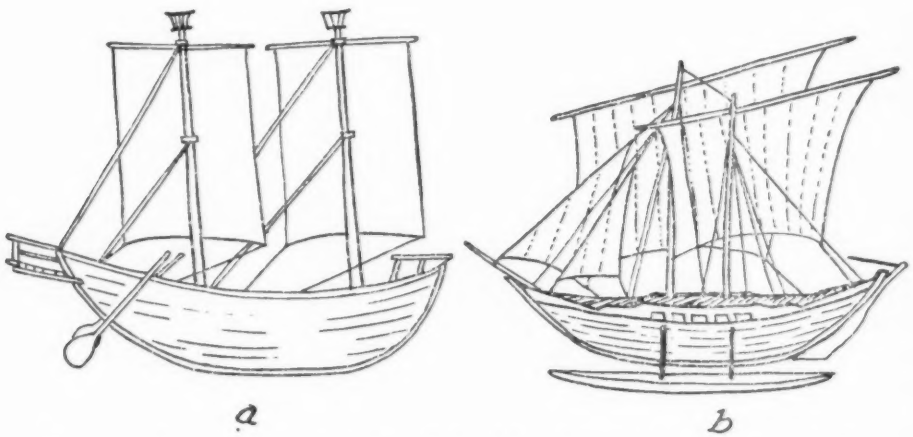


Fig. 25. *a* shows a reconstruction of the ships shown on second-century Indian coins. *(After Schoff.)* *b* shows the Sinhalese coaster with a single outrigger and European head sails. *(Modified from Hornell.)*

the wind. This is probably the purpose of the crescentic head of the Hawaiian, the Santa Cruz, and the New Guinea (Mailu) 'crab-claw' sails.

Since the Boro Budur sculptures have been dated in the eighth or ninth centuries, it would seem that we might expect to find similar types to the west due to the Indonesian migrations that occurred as late as the tenth century. Indeed Paris[107] has shown a Boro Budur type from an island off East Africa. At Ceylon there is evidence to be found in the now obsolete Sinhalese coaster (Fig. 25b).[108] There are numerous details that point to a close relation to the Boro Budur ships:

(1) There are two masts with the larger one forward;

(2) There are rectangular sails that are wider than they are high;

[107] F. E. Paris, op. cit., Plate I.

[108] J. Hornell, *Water Transport* (Cambridge: University Press, 1946), p. 257.

(3) Both sails are set lug fashion in the same manner as the Boro Budur sails;

(4) The craft has a single outrigger;

(5) The hull is identical in shape to craft from the Celebes carrying similar sails.

If the Sinhalese coaster was originally of the Boro Budur type, it has been influenced by Arab, Indian, and European sail fashions in several details:

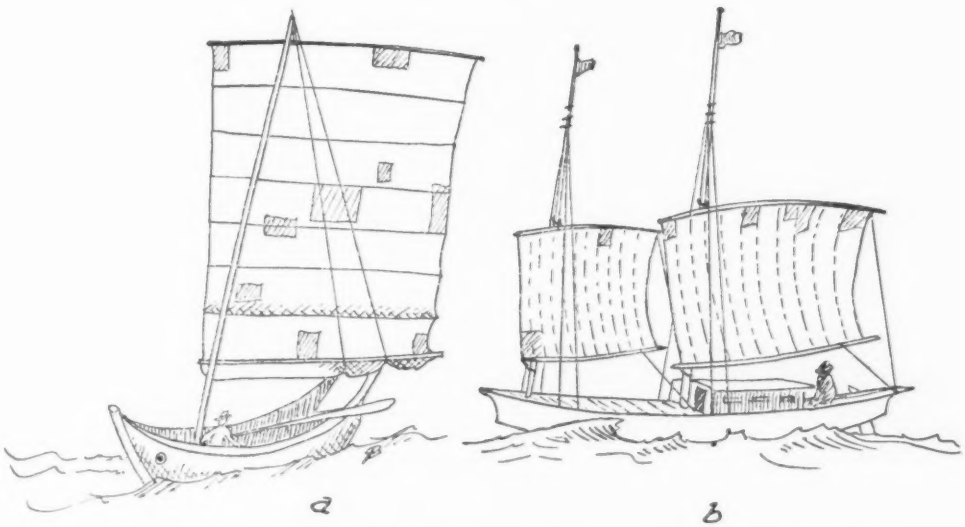


Fig. 26. Square-headed standing lugs. *a*, on a fishing junk of Chinese origin at Penang in the Malay Peninsula with battens. *(Sketch by Phyllis Brown from a photograph by Hornell.) b*, on a small fishing boat west of the Malay Peninsula, with rectangular sails similar to the Boro Budur type. *(Modified from H. W. Smyth.)*

(1) The yards at the bottom of the sails have been abandoned;

(2) The sail proportions were altered so that the sails were squarer;

(3) Two European jibs have been added as head sails;

(4) The rudder is of obvious Arab influence, as all Indonesian craft carried stern rudders off the quarter.

On the Coromandel coast of India (opposite Ceylon) numerous coins dated in the second century A.D. show two-masted vessels that are similar to the Sinhalese coaster in the shape of the hull. However, there are numerous details that would seem to indicate that these were not of the Boro Budur type:

(1) Both masts are of the same height;
(2) There are no outriggers shown;
(3) The masts are not placed the same distance from each end;
(4) There were apparently no yards at the bottom of the sails.

A reconstruction of one of these ships by Schoff[109] shows a vessel with square sails somewhat similar to the Ajanta tall lugs (Fig. 25a). Its general similarity to the Sinhalese coaster would seem to indicate that the Sinhalese craft was originally an indigenous type that had been influenced by the Boro Budur ships in the following points:

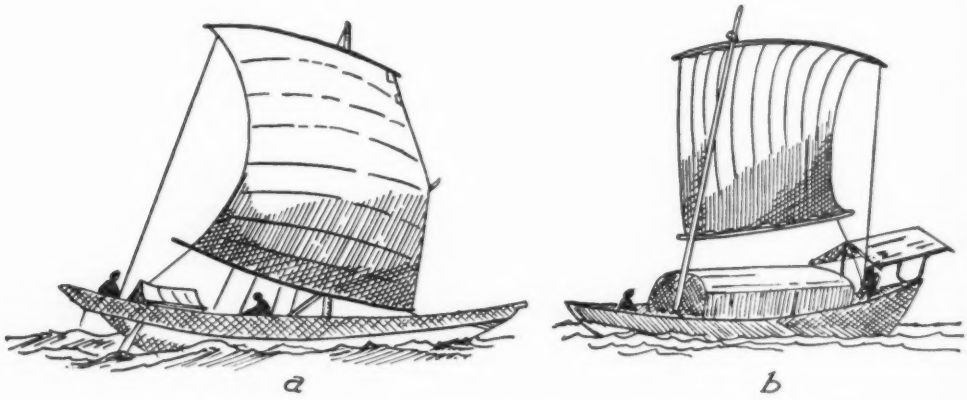


Fig. 27. Square-headed lugs. *a*, dipping lug of Junkseylon, Malay Peninsula, with pole prop to tauten the fore-edge of the sail. *b*, standing lug of the Gulf of Siam. *(Both modified from H. W. Smyth.)*

(1) Fore mast made larger;
(2) Proportions of the sails changed;
(3) An outrigger was added.

Hornell[110] relates that a type similar to the Sinhalese coaster was known in Madagascar; this had a single outrigger similar to the Ceylon form. Hornell[111] has stated that the Boro Budur ships were probably double outriggers because all existing Indonesian coasters are double, and because, of the five outriggers shown in the Boro Budur sculptures, four were on the starboard and one was on the port. However, the fact that

109 W. H. Schoff, *The Periplus of the Erythraean Sea* (New York: Longmans, Green, and Co., 1912), p. 244.

110 J. Hornell, *Water Transport* (Cambridge: University Press, 1946), p. 258.

111 J. Hornell, 'Outrigger Canoes of Indonesia,' *Madras Fisheries Bulletin No. 12* (Madras, Government Press, 1921), p. 100; A. C. Haddon and J. Hornell, *Canoes of Oceania* (Honolulu: B. P. Bishop Museum, 1938), III, 17.

the Ceylon and the Madagascar outriggers were single and the fact that they carried rigs similar to the Boro Budur ships might seem to indicate that the original Boro Budur ships were single outriggers.

Whether the development of this Javanese rectangular lug was influenced by various types of Chinese lugs can not be determined. From the reasons given above, it would seem that the tall Chinese lug was introduced to India around the Christian era and was apparently the sail in general use up to the seventh century. Therefore it must have been developed well before the Christian era in China.

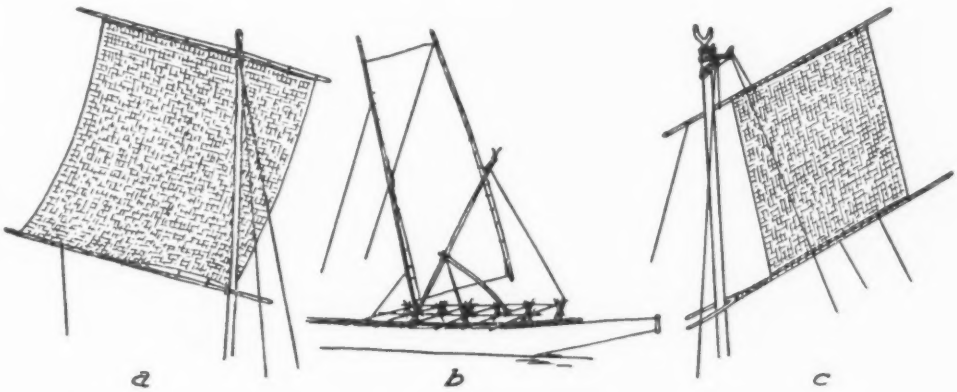


Fig. 28. Peculiar standing lugs of the Bismarck Archipelago. *a*, conventional standing lug of Arawe Island. *b*, standing lug adaptation of the Boro Budur type balance lug in the Admiralty Islands at Ninigo. *c*, variation of *a* that is essentially a gaff sail, from Umboi. *(After Haddon.)*

Whether the lug originated in China, in some part of Indonesia, or in the western Indian Ocean can not be said. Undoubtedly the square-headed lug was developed first; besides the tall lugs mentioned above, there are many small square-headed lugs to be found on small boats in the Far East. One of these with seven battens on a Chinese fishing junk at Penang in the Malay Peninsula is shown by Hornell (Fig. 26a).[112]

The Boro Budur type of sail was modified further in some areas, undoubtedly influenced by the type of Chinese standing lug seen in the Penang sail. Many of these are to be seen in the Mergui Archipelago of the west of the Malay Peninsula, where we find a small sailing craft with square-headed standing lugs with an obvious relation to the Boro Budur type, since the sail is wider than high (Fig. 26b).[113]

[112] J. Hornell, *Water Transport* (Cambridge: University Press, 1946), Plate XIV-B.

[113] W. H. Smyth, *Mast and Sail in Europe and Asia* (London: Wm. Blackwood and Sons, 1929), pp. 379-383.

There are many square-headed lugs on both coasts of the Malay Peninsula, and in the Gulf of Siam. Some of these are dipping lugs with the tack of the sail forward of the mast (Fig. 27a),[114] but others (Me Nan in Siam) are similar to the Mergui Archipelago standing lugs with the tack of the sail at the base of the mast (Fig. 27b).[115] At Singapore we find a sail similar to that found on the South Arabian and East African coasts (Fig. 16b); since it is without a boom at the foot, the sail is exceptional for the Far East.[116] However, it differs from the Indian and Arab dipping lugs shown in Figure 16 by being a standing lug.

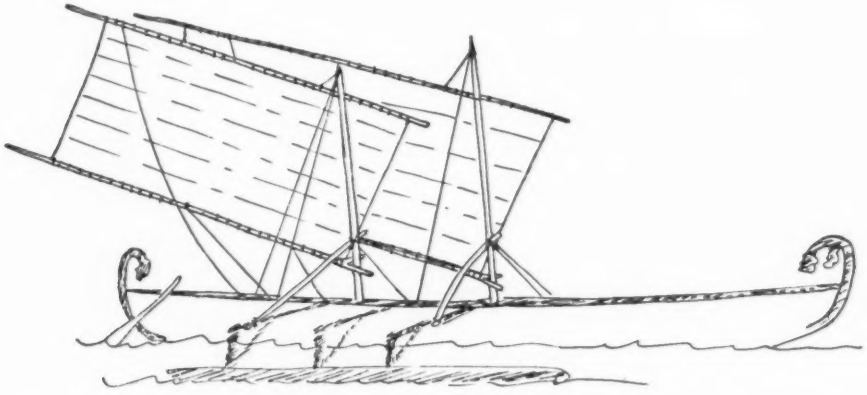


Fig. 29. Standing lug adaptation of the Boro Budur balance lug on a single outrigger of the Bismarck Archipelago. *(Original sketch by the author from a photograph published by Haddon.)*

In the Bismarck Archipelago at Arawe Island (off the south coast of New Britain) there is a sail that is identical to the square-headed lugs that we have been considering,[117] and undoubtedly owes its origin to one of the above sources in the Malay Peninsula (Fig. 28a). The Siassi Islanders (south of Umboi off the west end of New Britain) have apparently carried the design one step further so that all the sail is behind the mast (Fig. 28c).[118] In doing this they lashed a fork to the boom so that the jaws rested on the mast. The forked boom from this area probably spread to other places in Melanesia, and this rig influenced many of the Boro Budur type sails that were in other areas.

114 Ibid., pp. 387, 392-395, 406.

115 Ibid., pp. 445, 451.

116 Ibid., p. 389.

117 A. C. Haddon, *Canoes of Melanesia, Queensland, and New Guinea* (Honolulu: B. P. Bishop Museum, 1937), p. 162.

118 Ibid., p. 159.

Thus at Kaniet in the Admiralty Islands (Bismarck Archipelago) the rectangular Boro Budur type is altered with a fork on the boom and the sail is set almost vertically.[119] This same design is seen at the Ninigo Islands (Admiralties) and is even more vertical (Fig. 28b).[120] In the Hermit Islands (Admiralties) there is an example that shows the closeness of this type of rig to the Boro Budur prototype (Fig. 29).[121] Both sails have forks

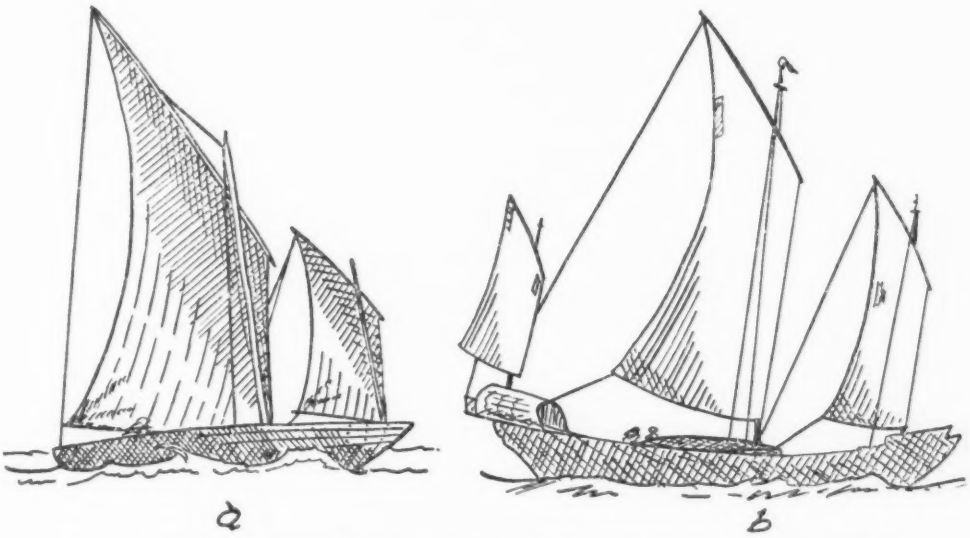


Fig. 30. Jib-headed standing lugs in the Gulf of Siam. *a,* two-masted fishing vessel. *b,* three-masted Cambodia coaster. *(Modified from H. W. Smyth.)*

on the booms. This Hermit Island craft shows that these rectangular standing lugs with forked booms (Fig. 28) have been derived from Boro Budur prototypes and are not Melanesian spritsails set on masts.

In the Torres Straits region of the Cape York Peninsula of Australia[122] there is a peculiar arrangement of a rectangular sail that is a local development of the Melanesian spritsail found across the straits in New Guinea, and this is not related to these Boro Budur type sails.

The most typical sail of the Gulf of Siam is a tall, jib-headed standing lug, found on fishing boats and coasters alike. The *rua pet* carries a large mainsail and a smaller foresail; both are tall, jib-headed standing lugs (Fig. 30a). The Cambodia coasters are three-masted with the same type of

119 Ibid., p. 170.
120 Ibid., p. 176.
121 Ibid., p. 174.
122 Ibid., p. 196.

sails (Fig. 30b).[123] The sails are made of long, vertical pieces of rather narrow palm matting and are very light. There is always a boom at the foot of the sail.

This sail is similar to the standing lugs of the western Indian Ocean (Fig. 17) in that it is the first step in altering the cut of a square-headed lug sail (in this case a standing lug, but in the western Indian Ocean, dipping lugs). The height of the sail certainly suggests the tall Chinese lug sails (Fig. 21b), but the vertical seams and the lack of battens in the sail suggest that these sails were copies of the tall Chinese lug that developed jib heads. It is this particular Eastern standing lug with a boom that undoubtedly inspired similar sail designs in the Mediterranean and Europe. From the abundance of standing lugs in Indonesia, the lack of them in the western Indian Ocean, and the scarcity of them in Chinese waters, it would seem that the Indonesians must have developed the standing lug, in addition to all their other astounding maritime developments (Fig. 12).

We have seen that the characteristic sails of the Arabs, Indians, and Europeans are without booms at the foot of the sail, while the Indonesians, Melanesians, Micronesians, and Polynesians typically used a boom (or sprit) on all of their sails. The European spritsail did not have a boom at its foot until it was adopted by various Eastern peoples. The Portuguese were great users of the lateen sail, and many of their craft used in Eastern waters had a strong resemblance to the Arab dhow of today.

Since the boom on the gaff rigged sail did not appear until the middle of the seventeenth century, it seems that it must have been discovered by either the English, French, or Dutch in their exploration of Eastern Seas and spread to Europe. The idea of placing a boom at the foot of a fore-and-aft sail would not be immediately apparent from looking at the boom of a balance lug of the Boro Budur type, or an Oceanic lateen, but it would be from looking at the forked boom used in the Bismarck Archipelago. Since the Dutch discovered the Admiralty Islands in 1616, it seems that they may have been the discoverers. From the distribution of the forked boom in the Bismarck Archipelago, it is evident that it could not have been introduced to these islands within historical times by Europeans.

An illustration of the siege of Stockholm of 1523 shows a square-headed gaff sail, which did not become common until the late sixteenth cen-

[123] H. W. Smyth, *Mast and Sail in Europe and Asia* (London: Wm. Blackwood & Sons, 1929), pp. 418-423, 434-436.

tury.[124] This rig gradually led to the marconi rig by the addition of a boom and the continued shortening of the gaff until it vanished. Thus the marconi rig would probably not have been evolved so early if it were not for the forked boom of the Bismarck Archipelago. The only fore-and-aft sails that the West can claim as their own are the Dutch spritsail, and the triangular jib sail which the Dutch apparently invented too; all other sails are of Eastern influence.

It is very interesting to note that both the Ajanta ship (Fig. 20) and the Boro Budur ships (Fig. 24) show a bow spritsail (not to be confused with the fore-and-aft spritsail discussed above) set on a raking spar similar to the Roman *artemon*. Since Roman and Greek influence in the Indian Ocean ceased about the third century A.D., and since there is no proof that the Romans ever went east of India in their own bottoms, it must be assumed that this sail was adopted by Indians and Indonesians in the third century or before by contact in India.

For over a thousand years after this the sails of the Eastern Seas had a development free of Western influence. This was shattered when the Portuguese sailed around the Cape of Good Hope in 1497. By this time the Arab lateen was dominant in Western waters and the Micronesian lateen had reached its zenith in the east. During this time many other sails that had been in use when the Romans were sailing to India had marked time and were still used by certain peoples; this is well illustrated by the tall Chinese square-headed dipping lug and the Boro Budur rectangular balance lug. The triangular fore-and-aft head sails used by European vessels in the seventeenth and eighteenth centuries became very popular with Eastern sailors and completely replaced the Roman *artemon* type of bow spritsail. These triangular head sails are always of cotton cloth, although the main, fore, and mizzen sails are often of the traditional matting.

The Oceanics never did perfect their lateen to as high a degree as was possible: had they freed the forward end of the yard and fastened the boom to the mast, the craft could have been tacked head to wind. However, there was no incentive for this change, since the single outriggers had to be turned end for end anyway for best performance. The final development of the Oceanic lateen was done by American yachtsmen in originating the canoe rig and the recently successful *Sailfish*, a sailing surfboard with a centre-board and a triangular lateen sail.

[124] R. M. Nance, 'Spritsails,' *Mariner's Mirror*, 3 (1913), pp. 155-157.

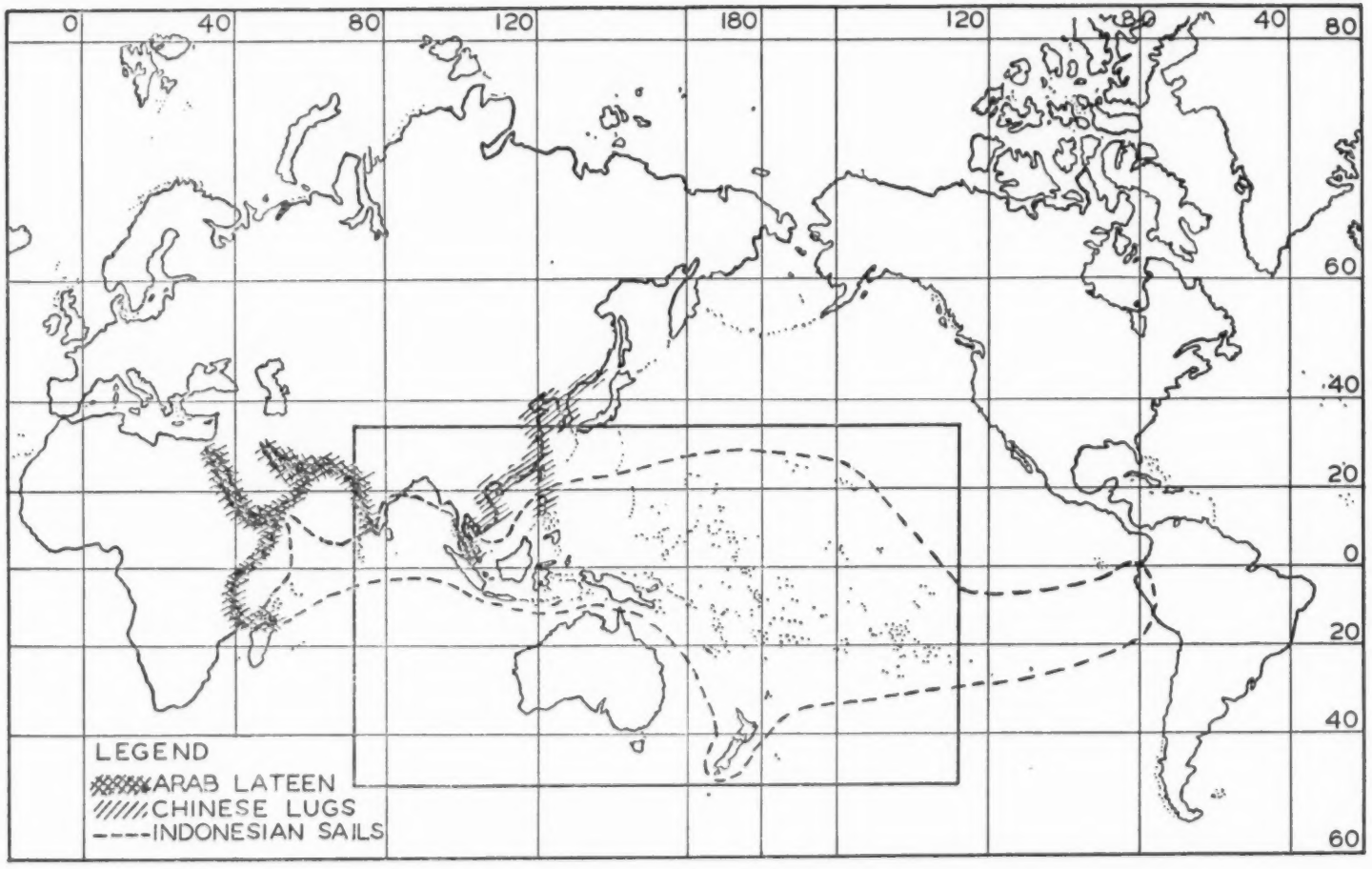


Fig. 31. Distribution of sail types in the Pacific and the Indian Ocean.
Rectangle in centre of map indicates area of the map in Figure 12.

VIII

In summary it seems that the important points brought out in this article are as follows:

(1) Many Indonesian sails owe their inspiration to the ancient Egyptian square sail.

(2) The European spritsail and the Oceanic spritsail had independent origins.

(3) The Arab lateen and the Oceanic lateen had independent origins.

(4) The Mediterranean triangular lateen developed from the Arab lateen.

(5) The lug sail developed in Eastern Seas into a great many forms, many of which are the ancestors of European types with booms.

(6) The standing lug apparently developed in Indonesia.

(7) The booms of both the European gaff and marconi sails are of Eastern origin.

(8) Of the great variety of Chinese lugs, it seems certain that the tall dipping lug was developed at least by the start of the Christian era.

(9) All Eastern sails can be broken down into three broad classifications which show an unusual correlation with geographical location (Fig. 31):

(*a*) *Arab sails,* typified by the quadrilateral lateen with its vertical leech and lack of boom at the foot. The sail is found in the western Indian Ocean: in the Persian Gulf, in the Gulf of Oman, in western India, and in the Gulf of Aden. The extension to the Red Sea has taken place in the last century.

(*b*) *Indonesian sails,* typified by triangular spritsails and lateens, and by rectangular lugs. All these sails have a boom at the foot of the sail. The distribution of these sails starts on the southeast coast of India where the Arab lateen stops, and continues through Indonesia and Oceania to South America. There is an astounding general correlation between the geographical area covered by these 'Indonesian sails' and the area covered by the combined distribution of the single and double outriggers.[125] This would seem to be strong evidence for the development of both the double and the single outrigger in Indonesia.

(*c*) *Chinese sails,* typified by well-developed lugs with battens. The distribution covers the Chinese coast and Central Indonesia around the Malay Peninsula.

[125] See map in J. Hornell, *Water Transport* (Cambridge: University Press, 1946), map in back.

Fig. 31. Distribution of sail types in the Pacific and the Indian Ocean. Rectangle in centre of map indicates area of the map in Figure 12.

Notes

Defence AND *Hinchinbrook*

THE suggestion that *Defence* of South Carolina became the British *Hinchinbrook* in 1777 and was recaptured in 1778 is probably correct,[1] but needs a little explaining. At first sight one would say it was impossible, because a schooner *Hinchinbrook*, commanded by Alexander Ellis, can be traced from September 1775 to July 1776 in *The Despatches of Molyneux Shuldham*,[2] and since the commanding officer of the ship taken by the Americans in April 1778 was also named Ellis, it is natural to suppose that we are dealing with one and the same ship. This was, however, not the case. A note in one of the MS. Lists of the Navy in the Admiralty Library shows that this second *Hinchinbrook* was bought on 12 May 1777 'in lieu of the *Hinchinbrook* schooner,' which was then unfit for service and put out of commission. Presumably the new acquisition was taken over by the commanding officer and crew of the schooner (with additions) and the name went with them.

There were at least four vessels called *Hinchinbrook* in American waters in 1775-1783. Number one was the schooner, probably taken up for service in 1775 and definitely paid off as useless in May 1777. Number 2 was the 'Rebel privateer brig,' *Defence*, captured in April 1777, taken into British service in May and recaptured in April 1778. Number three was the Boston privateer *Tartar*, captured by *Bienfaisant* on the Newfoundland station on 29 August 1777; she was classed as a 16-gun sloop and was at Woolwich in 1780; next year she became a 'slop ship' at Sheerness and in 1783 she was sold for £960 'with some stores.' Number four (commanded by Nelson in 1779-1780) was a French merchantman, *Astrée*, captured on the Jamaica station in October 1778 and taken into the British service as an 'armed ship.' Laughton's *The Nelson Memorial*, from which this information is taken, calls her a 24-gun ship, but official lists make her first an 18-gun sloop and afterwards a 28-gun 6th Rate. Nelson certainly did not consider her a 'frigate,' when he had her, since he writes that he had been promised a frigate at the earliest opportunity. This *Hinchinbrook* was wrecked on Jamaica in 1782.

R. C. ANDERSON

[1] Harold A. Mouzon, '*Defence*, A Vessel of the Navy of South Carolina,' THE AMERICAN NEPTUNE, XIII (1953), 29-50.

[2] Naval History Society, 1913.

VOYAGE OF *Jenny* OF BRISTOL

HISTORIANS assume that the first vessel to enter the Columbia River was *Columbia* of Boston, commanded by Robert Gray. The claim of the schooner *Jenny* of Bristol, England, and of her master, James Baker, are worth considering. If *Jenny* were not the first she was certainly the second to enter the river.

Bruno de Heceta, pilot of the Spanish vessel *Santiago*, examined the bay into which the Columbia discharges. On 17 August 1775, the currents and eddies led him to believe that the place was the mouth of some great river. The Spaniards called it Entrada de Heceta (Heceta Entry).

Captain Gray brought *Columbia* into the mouth of the river on 12 May 1792. Gray later mentioned his discovery to Captain George Vancouver, R.N., who sent H.M.S. *Chatham*, under Lieutenant Robert Broughton, to follow it up. *Chatham* crossed the bar on 20 October 1792. When Broughton anchored near Point Adams on 6 November 1792, he found *Jenny* there. When *Chatham* left the river on 10 November she followed the lead of *Jenny*. Vancouver says of Captain Baker: 'Having been here in the

earlier part of the year he was better acquainted than Mr. Broughton with the course of the channel.'

What did Vancouver mean by 'the earlier part of the year'? According to Felix Farley's 'Bristol Journal' the three-masted schooner *Jenny*, 78 tons, owned by Sidenham Teast, left Bristol on 18 June 1791 for Cape Verde and the South Seas. The log of Captain Ingraham of *Hope* of Boston, shows that *Jenny* was at Clayoquot Sound, Vancouver Island, on 6 August 1792. She was at Nootka Sound on 7 October.

On her way to the Northwest Coast, *Jenny* appears to have touched at Easter Island, Tahiti, Christmas Island and Hawaii. At Christmas Island Baker found a bottle containing a letter left by Captain Cook.

At Tahiti, *Jenny* picked up Matthew Weatherhead, master of the British whaler *Matilda*, which had been wrecked, according to Vancouver, on 25 February 1792. Weatherhead stated, in a letter left at Tahiti where it was handed to Captain William Bligh of H.M.S. *Providence* on 9 April, that the boat voyage from the wreck to Tahiti took six days. Therefore Weatherhead reached Tahiti on or about 3 March.

Captain Baker carried two girls away from Hawaii on *Jenny*. Vancouver returned them to their home, landing them at Waimea on 29 March 1793. He states that the girls, Raheina and Tymarow, had 'endured an uncomfortable absence of more than a year.' If this be taken literally, they left their homes in Hawaii before 29 March 1792. As *Jenny* cannot have left Tahiti before 3 March it does not seem possible that she left Hawaii as early as this.

It is reasonable to assume that *Jenny* entered the Columbia River on her way from Hawaii to Clayoquot Sound, where she was on 6 August. She is also said to have entered and named a harbour called Port Sidenham in 43°-50° N.—that is, south of the Columbia.

There is a reference to one of *Jenny*'s 1792 visits to the Columbia in the Log of *Ruby* of Bristol, also owned by Teast and commanded by Charles Bishop, which spent the winter of 1795-1796 in the Columbia. An entry for 1 December 1795 reads: 'Shelathwell, the chief next to Taicum, has a child by one of his women slaves who ascribes it to Mr. Williams, the first officer, who was here four years ago in Mr. Teast's ship the Jenny.'

An interval of four years would take *Jenny*'s visit back to 1791. Nor is there anything to show whether it refers to the first visit or to that in October-November 1792.

In the absence of direct evidence it is quite impossible to fix the date of *Jenny*'s first visit. It might, as far as the evidence goes, have been before 12 May 1792. It was probably after that date.

However, if *Columbia* was the first vessel to enter the river, the little *Jenny* was certainly the second.

THOMAS DUNBABIN

Square Sails and Fore-and-Aft Sails

It came as something of a shock to find my wife and myself classed by Mr. Bowen (NEPTUNE, VIII, 83, note) as among the 'worst offenders' in calling lugs and lateens fore-and-aft sails. When we wrote 'The Sailing Ship' we were compelled to compress and simplify and might reasonably expect to be forgiven for failing to point out that these two sails have to be 'dipped' on changing tack. Within the framework of our explanation I must claim that we were perfectly justified in calling them fore-and-aft sails. Mr. Bowen will hardly deny that they do indeed receive the wind on either surface and do always keep one edge to windward, which is what the strictest fore-and-aft sail does and exactly the opposite of what happens with a square sail.

Since the illustrations in the April instalment of Mr. Bowen's very thorough study of Eastern and Pacific sails only go as far as Fig. 15, we cannot yet see

what he means by a 'jib-headed lug,' but to me this seems to be a contradiction in terms; 'jib-headed' suggests to me a narrow angle between the luff and the leech *without* a yard. Would not 'high-peaked' be a better description?

Mr. Bowen tells us that the Polynesians invented what we now call the 'Marconi rig' and says that this was evolved much later in the West by the shortening of the gaff to vanishing point. I am not clear whether he is referring to the modern yacht's mainsail or to the 'leg-of-mutton' sail characteristic of Bermudian vessels at an earlier date, but in either case I think his explanation is wrong. The first European form of this sail was probably produced by stepping the heel of a lateen-yard in the boat and doing without a mast; this stage can be seen in Vroom's picture of *Prince Royal* off Flushing in 1613. In Holland a *very* short gaff roughly equivalent to the 'head-board' of a modern sail was soon introduced, but the gaffless sail came first. As for the Marconi rig of today, this was quite definitely produced from what used to be called, unjustifiably, the 'gunter-lug,' a sail with its gaff carried almost vertically and usually slightly curved. This gaff did not disappear by becoming gradually shorter, but simply shifted forward a few inches and became a prolongation of the mast. Some of the earliest experiments in this direction (in sailing canoes) were actually made with the same sails as had been used on the older rig.

R. C. ANDERSON

Emeline AND *City of Haverhill*

IN the article on 'The Gloucester Steamboats' by Charles R. Pittee in the October 1932 number of this journal, the author states that the steamer *Emeline* (p. 288) was built by Robert Collyer. Mr. Collyer's Christian name was Thomas.

City of Haverhill is mentioned in the same article (p. 290) as built by Robert F. Keough. But according to *Marine Engineering*, July 1902:

> There was recently launched from Atlantic Works, East Boston, Mass., the wooden steamer 'City of Haverhill' for service between Boston and Haverhill, to carry both passengers and freight. The hull is 135 feet long, 25 feet broad and 8 feet deep, and was designed by Wm. T. and Richard Keough, of Boston. The vessel is to be driven by one set of compound engines with cylinders 12 and 28 inches in diameter by 20 inches stroke. Two water-tube boilers with 54 square feet of grate surface supply steam at 200 pounds pressure. The builders are Burtison and Paterson.

Burtison and Paterson do not appear in the *Boston Register and Business Directory* for 1901, 1902, or 1904, so it seems probable that they were master carpenters at the Atlantic Works.

ELWIN M. ELDREDGE

BIBLIOGRAPHY
Recent Writings in Maritime History

BY ROBERT GREENHALGH ALBION

THREE innovations appear in this seventh instalment of the 'Writings.' A final section on 'Bibliography' has been added, to call attention to some useful compilations. For writings since 1945 not noted in the original lists, the 'Addenda' take a different form from the single list in the July 1952 issue; instead, these items appear at the end of each of the separate topical sections, so that anyone interested in a particular subject can locate them more easily. Finally, three books that are technically fiction have been included.

In that last connection, it can be argued that these three works, dealing with the *Globe* mutiny, the *Amistad* case, and Drake's 1585-1588 activities, represent more sound scholarship and introduce more 'new evidence' than many of the titles which have been included in these lists. The editors and advisory board, when this bibliography was determined upon, decided that it should include 'everything in English' with no comments upon the relative value of the entries. In consequence, scores of items which merely briefly rehash familiar topics have been included—the appearance of a book or article does not necessarily mean that it is considered either important or even interesting. Of the 350-odd items in this instalment, probably not more than 50 are valuable additions to maritime history proper, but, since there is no knowing just what one may seek to run down now or in the future, everything is included, with a *caveat lector*. If one could use a double asterisk to indicate major works of pertinent scholarship that will 'live,' it would be used in this instalment, probably, for the books of Boxer, Ehrman, Henderson, McClellan, Monk, and Parr. There is no intention to include maritime historical fiction in general, but only when it reflects useful and sound research.

A comprehensive routine has been developed which assures covering most of the obvious books and periodical articles in each quarter. But, as indicated in the opening remarks of the first bibliography in the Janu-

ary 1952 issue, it will be appreciated if readers will call attention to pertinent material published under special auspices that might escape attention. Particularly helpful in this respect have been Charles H. P. Copeland of the Peabody Museum; John L. Lochhead of the Mariners' Museum; John Lyman of *Log Chips;* and Ross H. Macdonald of the Defense Research Council, Ottawa. Correspondence on this subject should be addressed to Robert G. Albion, Study 16, Widener Library, Harvard University, Cambridge 38, Massachusetts.

Abbreviations: *D&HA, Dock and Harbour Authority; MCF, Maine Coast Fisherman; S&S, Ships and the Sea; S&SR, Shipbuilding and Shipping Record; SBF, Steamboat Bill of Facts;* and *USNIP, United States Naval Institute Proceedings.*

All dates 1953 unless otherwise indicated.

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XV. *Bibliography*

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